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RED CELL REINFUSION AND THE FREQUENCY OF PLASMA DONATIONS

PRELIMINARY REPORT OF MULTIPLE DONATIONS IN EIGHT WEEKS BY EACH OF SIX DONORS

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WITH THE TECHNICAL ASSISTANCE OF INA HO AND NANCY BALDWIN

The average donation of 500 cc. of blood entails the loss to the donor of approximately 75 Gm. of hemoglobin and 17.5 Gm. of plasma proteins, or a total of approximately 92.5 Gm. of proteins (taking hemoglobin for practical purposes as 100 per cent protein). The red cells as a rule are discarded, so that 80 per cent of the protein donated may be said to be wasted. This waste in the 5 million units of plasma required by the armed forces this year represents a loss of 375,000 Kg. of human hemoglobin and 188 Kg. of iron!

If, however, the red cells are reinfused into the donor, then he is relieved of 80 per cent of this protein drain and from purely quantitative considerations should be able, theoretically, to donate plasma five times more frequently than is the practice at present, which is at most one donation every eight weeks. The present work is an attempt to determine within what range this mathematical consideration holds true.

PRESENT WORK

A group of 6 volunteer donors, each on a federal government prescribed diet adequate both in calories and in nitrogen intake, were subjected to frequent blood donations. In the first group of 3 donors, donor 1 gave three donations and donors 2 and 3 gave four each on alternate days, receiving back the red cells suspended in 5 per cent dextrose solution the day subsequent to the bleeding. The total amount bled was in each case approximately 34 per cent of the blood volume calculated from the body weight (using 8 per cent as the factor for males and 9 per cent for females). The hematocrit, hemoglobin value and the plasma protein concentration determined either by the falling drop method [1] or the chemical method of tyrosine equivalent [2] were followed in each subject before and after each donation. The reticulocyte count and the serum bilirubin level were determined in an attempt to find out whether red cell destruction had taken place as a result of the artificial extracorporeal condition to which so high a percentage of red cells had been exposed. The results are shown in tables 2 to 4. It will be seen that the final hematocrit and hemoglobin values and plasma protein levels were practically the same after the donations as the initial values, although after each bleeding and before the reinfusion of red cells they registered a slight drop. The bilirubin level showed a very slight rise into the upper limit of normal after each reinfusion, perhaps as a result of the reinjection of a small amount of hemoglobin set free by hemolysis, but promptly fell to lower values. The reticulocyte count was always within normal limits.

In the second group of 3 donors, each gave a full sized donation weekly, 1 for nine weeks and 2 for twelve weeks. In addition to the tests performed in the first group, the hemoglobin, the red, white and differential counts, the albumin and globulin partition and fragility tests were also determined. It will be seen from tables 5 to 7 that there was no perceptible change in the blood picture.

All 6 felt subjectively well throughout the donating period, except that donor 5 had a slight pyrogenic reaction after the 7th reinfusion. No intercurrent infection developed in any one of these 6 subjects. Their weights have either remained the same or risen. The initial and final values are summarized in table 1. It thus appears that full sized blood donations may be made on alternate days for four consecutive times or every consecutive week for from nine to twelve weeks without any change in the blood picture as determined by these tests or in the well-being of the donor.

The electrophoretic distribution of the plasma proteins of C. P. is given in table 8. It is seen that no significant alteration of the pattern is discernible even after twelve weekly donations.

COMMENT

As far as can be determined by a review of the literature, the prescription of the eight week interval between blood donations has been made by the work on hemoglobin and red cell regeneration. This period seemed logical when whole blood was used. However,

From the Laboratory of Experimental Surgery and the Department of Surgery, New York University College of Medicine and the U. S. P. H. S., Sheepshead Bay, N. Y., under a grant from Williams-Waterman Fund of Research Corporation.

The electrophoretic studies reported here were done in the laboratory of Dr. J. W. Williams, Department of Chemistry, University of Wisconsin, with the cooperation of Drs. Mary L. Peterman, Margaret Bender and Miss Martha Blake Goodloe.

1. Barbour, H. G., and Hamilton, W. F.: The Falling Drop Method for Determining Specific Gravity, J. Biol. Chem. **69**: 625, 1926.
2. Greenberg, D. M.: The Colorimetric Determination of the Serum Proteins, J. Biol. Chem. **82**: 545, 1929.

as a result of a shift in therapeutic emphasis to the use of plasma a somewhat illogical situation now exists in that the rate of regeneration of a waste product is made to be the pacemaker of another product, plasma proteins, which for all that is known may have an entirely different replacement rate.

There may be said to be two schools of opinion on how frequently a person may donate whole blood. Minot and Lee [3] in 1923 were of the opinion that several donations of 500 cc. might be given by a single donor at intervals of one week or more without disturbance. Giffin and Haines [4] in the same year studied 84 professional donors at the Mayo Clinic and concluded that multiple donations of 500 cc. by healthy males at intervals of four to five weeks led to no harmful results. Jones, Widing and Nelson,[5] on the basis of a study of 4,000 transfusions given by 500 donors, stated that if 400 cc. or less is donated male donors may be used four or five times at intervals of one to five days without ill results. They reported 2 donors with pronounced regenerative powers for hemoglobin, 1 donating 2,000 cc. in eighteen days and recovering completely in ten days. Both of the latter teams of workers, however, warned that the female donor is much more likely to develop postdonation anemia. Brinck and Oettinger [6] found no anemia in donors even when blood was withdrawn repeatedly every three to four weeks. The work of Whipple and his colleagues [7] seems to lend confirmation to this school of thought in that they found that hemoglobin regeneration in a 10 Kg. dog may be as rapid as 75 Gm. per week. At this rate a 60 Kg. man would be able to synthesize in one week six times the hemoglobin he gives with each donation.

TABLE 1.—*Master Table Showing Various Values of Six Patients Giving Frequent Multiple Donations*

Initials, Age, Sex	Weight, Kg.	Calculated Blood Volume, Liters	Transfusion, Days	Amount Bled, Liters	Per Cent Bled	Hematocrit, per Cent	Hemoglobin, Gm.	Red Blood Cells, Millions	White Blood Cells, Thousands	Differential Count, Polymorphonuclears/Lymphocytes	Reticulocytes	Total Plasma Proteins, Gm. %	Albumin/Globulin	Van den Bergh Units, High	Fragility, Final	Approximate Amount Protein Donated, Gm.
E. B., 22, ♀	....	4.69	3/9	1:53	33	..	....	...	...	.....	...	....	....	0.45	.....	65
Initial.....	52.2	....	...	....	..	34	....	...	...	.....	0.9	6.5	....			
Final.....	52.2	....	...	....	..	34	....	...	...	.....	...	6.33				
High.....	....	....	...	....	..	..	....	...	...	.....	0.9					
H. G., 19, ♂	....	6.20	4/11	2.20	35	..	....	...	...	.....	...	....	....	0.42	.....	87
Initial.....	77.2	....	...	....	..	45	....	...	...	.....	0.3	7.3	....			
Final.....	77.2	....	...	....	..	45	....	...	...	.....	...	6.92				
High.....	....	....	...	....	..	..	....	...	...	.....	1.0					
E. R., 20, ♂	....	5.96	4/9	2.50	35	..	....	...	...	.....	...	....	....	0.75	.....	82
Initial.....	74.6	....	...	....	..	49	....	...	...	.....	0.6	6.6	....			
Final.....	74.6	....	...	....	..	49	....	...	...	.....	...	6.5				
High.....	....	....	...	....	..	..	....	...	...	.....	1.1					
C. P., 21, ♂	....	5.90	12/86	6.30	107	..	....	...	...	.....	...	....	....	0.60	0.42/0.34	248
Initial.....	72.7	....	...	.. .	..	41.5	15.3	5.5	3.7	45/55	0.2	6.9	4.75 / 2.25			
Final.....	74.7	....	...	....	..	43	15.0	4.8	3.6	56/40	...	6.7	4.30 / 2.50			
High.....	....	....	...	....	..	..	....	...	...	.....	0.3					
J. F., 22, ♂	....	7.20	12/66	6.37	90	..	....	...	...	.....	...	....	....	0.30	0.44/0.34	237
Initial.....	90.6	....	....	..	..	51	15	5.3	8.5	60/40	0.4	7.5	4.73 / 2.67			
Final.....	97.0	....	...	.. .	..	51.5	15.8	5.3	8.5	57/43	...	7.3	4.26 / 3.04			
High.....	....	....	...	....	..	..	....	...	...	.....	0.5					
J. A. B., 34, ♂	....	10.90	9/57	4.84	58	..	....	...	...	.....	...	....	....	0.30	0.44/0.34	197
Initial.....	103	....	...	...	..	50	14.5	4.5	8.7	60/39	0.3	7.86	4.00 / 2.73			
Final.....	104	....	...	....	..	53	14.5	5.0	9.6	62/31	...	7.9	4.60 / 3.30			
High.....	....	....	...	....	..	..	....	...	...	.....	0.5					

TABLE 2.—*E. B., Woman Aged 22, Computed Blood Volume 4.69 Liters*

Date	Weight, Kg.	Transfusion/Days	Total Amount Bled, Cc.	Per Cent Bled	Hematocrit, per Cent	Reticulocytes, per Cent	Total Plasma Proteins, Gm. %	Van den Bergh Units	Bleeding, Cc.
4/ 9.....	52.7	...	500	10.6	34	N.	6.50	....	500
4/10.....	....	...	.....	....	32	...	6.16	....	...
4/12.....	....	...	.....	....	34	...	6.56	....	...
4/13.....	....	2/4	1,000	21.2	34	...	6.15	....	500
4/14.....	....	...	.....	....	27.5	...	5.64	....	...
4/15.....	....	...	.....	....	35	...	6.47	....	...
4/16.....	52.2	3/9	1,530	32.6	37	...	7.15	....	530
4/17.....	....	...	.....	....	34	...	6.59	....	...
4/19.....	....	...	.....	....	34	...	6.71	....	...
4/22.....	....	...	.....	....	34	0.9	6.69	....	...
4/26.....	....	...	.....	....	34	...	6.54	....	...
4/30.....	....	...	.....	....	37	...	7.02	0.45	...
5/11.....	....	...	.....	....	34	0.3	6.33	0.48	...

3. Minot, G. H., and Lee, R. J.: Transfusion of Blood, in Nelson Loose Leaf Medicine, New York, Thomas Nelson & Sons, 1923, vol. 4, p. 167.

4. Giffin, H. Z., and Haines, S. F.: A Review of a Group of Professional Donors, J. A. M. A. **81:** 532 (Aug. 18) 1923.

5. Jones, H. W.; Widing, Herbert, and Nelson, Lyle: Blood Donors: A Study of the Effect in Donors of Repeated Blood Loss, J. A. M. A. **96:** 1297 (April 18) 1931.

6. Brinck, J., and Oettinger, H.: Beobachtungen an Blutspendern, Med. Klin. **33:** 307, 1937.

7. Whipple, G. H.: Protein Production and Exchange in the Body, Including Hemoglobin, Plasma Protein and Cell Protein, Am. J. M. Sc. **196:** 609, 1938.

In the more conservative school may be mentioned Martin and Myers,[8] who in 1934 stated that donations of 500 cc. should not be given oftener than every three months, an opinion supported by Brewer [9] on the basis of his eight years' experience with the London Blood Transfusion Service. Brewer also recommended that the interdonation interval for female donors be not shorter than four months. The more recent work of Fowler and Barer [10] and of Alstead [11] seems to indicate the wisdom of the present prescribed interdonation interval of eight weeks.

It is to be noted that Giffin and Haines, and Jones, Widing and Nelson cautioned that female donors are more liable to develop postdonation anemia. Brewer believed that the interdonation period for female donors should be longer, while Martin and Myers stated that female donors regenerate hemoglobin much more slowly. Some of these authors attribute this less effective hemoglobin replacement to a less effective hemopoietic mechanism, although it seems to us that the menstrual blood loss alone may account for it.

Of particular interest to the present study may be mentioned the work of two teams of workers on the blood picture following multiple donations. Snapper and his Chinese colleagues [12] found in a group of 101 professional donors a large incidence of postdonation anemia. This was attributed to the undernutrition of these subjects, all of whom were in the Peiping area. Fukuda and Tominaga [13] reported that ten to twenty donations of blood at intervals of about two weeks resulted in a decrease of hemoglobin, red cells and specific gravity of the peripheral blood. Forty to eighty such donations within two to three years led also to decreased osmotic resistance of the red cells. This amount of blood loss is considerably less than that

TABLE 3.—*H. G., Woman Aged 19, Computed Blood Volume 6.2 Liters*

Date	Weight, Kg.	Transfusion/ Days	Total Amount Bled, Cc.	Per Cent Bled	Hematocrit, per Cent	Reticulocytes, per Cent	Total Plasma Proteins, Gm. %	Van den Bergh Units	Bleeding, Cc.
4/28	77.2	...	550	9	45	...	7.73	....	550
4/29	....	...	.....	..	40	...	7.14	....	...
5/ 3	....	2/6	1,100	18	47	...	....	....	550
5/ 4	....	...	.....	..	42	...	....	....	...
5/ 6	....	3/9	1,650	27	44	...	6.93	....	550
5/ 7	....	...	.....	..	45	0.8	5.73	....	...
5/ 8	....	4/11	2,200	35	..	...	....	....	550
5/ 9	....	...	.....	..	40	...	6.32	....	...
5/11	....	...	.....	..	45	1.0	6.92	0.42	...

TABLE 4.—*E. R., Youth Aged 20, Computed Blood Volume 5.96 Liters*

Date	Weight, Kg.	Transfusion/ Days	Total Amount Bled, Cc.	Per Cent Bled	Hematocrit, per Cent	Reticulocytes, per Cent	Total Plasma Proteins, Gm. %	Van den Bergh Units	Bleeding, Cc.
4/26	74.6	...	500	8.4	49	...	6.64	....	500
4/27	....	...	.....	....	45	...	6.64	....	...
4/28	....	2/2	1,050	17.6	47	...	7.23	....	550
4/29	....	...	.....	....	42	0.6	6.78	....	...
4/30	....	3/4	1,550	25.9	48	...	7.69	....	500
5/ 1	....	...	.....	....	46	...	6.47	0.75	...
5/ 3	74.6	4/9	2,100	35.2	..	0.6	....	....	550
5/ 4	....	...	.....	....	44	...	6.40	....	...
5/ 6	....	...	.....	....	47	...	6.67	....	...
5/ 7	....	...	.....	....	48	0.2	6.85	....	...
5/11	....	...	.....	....	49	1.1	6.50	0.52	...

TABLE 5.—*C. P., Man Aged 21, Computed Blood Volume 5.9 Liters*

Date	Weight, Kg.	Transfusion/ Days	Total Amount Bled, Cc.	Per Cent Bled	Hematocrit, per Cent	Hemoglobin, Gm.	Red Blood Cells	White Blood Cells	Differential Count, Polymorphonuclears/ Lymphocytes	Reticulocytes, per Cent	Total Plasma Proteins, Gm. %	Albumin/ Globulin	Van den Bergh Units	Fragility	Bleeding, Cc.
8/ 2	72.7	....	500	8.5	41.5	15.3	5,550,000	3,500	44/52	...	....	.....	...	.....	500
8/ 4	....	....	.....	....	..	....	.....	3,750	45/55	...	....	.....	...	.....	...
8/ 9	....	2/7	1,000	17.0	..	....	.....	4,500	52/48	...	....	.....	...	.....	500
8/11	....	....	.....	....	..	....	.....	.....	.....	...	6.9	4.75/2.25	...	.....	...
8/17	....	3/15	1,500	25.0	..	....	.....	.....	.....	...	....	.....	...	.....	500
8/24	....	4/22	2,000	34.0	..	....	.....	.....	.....	...	....	.....	...	.....	500
8/31	....	5/29	2,560	40.0	45	15.3	5,710,000	.....	.....	0.2	6.95	.....	...	.....	560
9/ 7	....	6/36	3,090	52.0	..	....	.....	.....	.....	...	....	.....	...	.....	530
9/14	....	7/43	3,620	61.0	..	....	.....	.....	.....	...	....	.....	...	.....	530
9/21	....	8/50	4,150	70.0	..	....	.....	.....	.....	...	....	.....	...	.....	530
10/ 5	....	9/64	4,680	80.0	..	....	.....	.....	.....	...	....	.....	...	.....	530
10/12	....	10/71	5,210	88.0	..	....	.....	.....	.....	...	....	.....	...	.....	530
10/19	....	11/78	5,740	97.0	..	....	.....	.....	.....	...	....	.....	...	.....	530
10/25	....	12/86	6,300	107.0	..	....	.....	.....	.....	...	....	.....	...	.....	530
10/29	....	.....	.....	....	43	15.0	4,850,000	3,600	56/40	0.3	6.70	.....	...	.....	...
11/11	....	.....	.....	....	..	....	.....	.....	.....	...	....	.....	...	0.44-0.34	...
11/19	74.7	.....	.....	....	..	....	.....	.....	.....	...	6.80	4.30/2.50	0.6	.....	...

8. Martin, J. W., and Myers, J. T.: The Effects of Blood Transfusions on Donors, J. Lab. & Clin. Med. **20:** 593, 1935.

9. Brewer, H. F.: Frequency of Blood Donations, Brit. M. J. **1:** 895, 1939.

10. Fowler, W. M., and Barer, A. P.: Rate of Hemoglobin Regeneration in Blood Donors, J. A. M. A. **118:** 421 (Feb. 7) 1942.

11. Alstead, S.: Rate of Blood Regeneration After Hemorrhage, Lancet **1:** 424, 1943.

12. Snapper, I.; Liu, S. H.; Chung, H. L., and Yu, T. F.: Anemia from Blood Donation: Hematological and Clinical Study of One Hundred and One Professional Donors, Chinese M. J. **56:** 403, 1939.

13. Fukuda, K., and Tominaga, Y.: Einige Haematologische Untersuchungen und den in unserer Klinik Angestellten Berufsspendern, Mitt. a. d. med. Akad. zu Kioto **23:** 708, 1938.

given by the donor in this country who donates the usual amount regularly every two months. It may be pointed out that the smaller size of the Japanese donors and the fact that undernutrition is common in Japan may play a part.

Lastly may be mentioned the paper of Cadham,[14] whose work is comparable in frequency but not in quantity with our present work. He drew blood at weekly intervals from 125 poliomyelitis convalescent patients for the purpose of obtaining convalescent serum. From 65 to 140 cc. of blood was drawn from 50 of these donors at weekly intervals with no resulting anemia but with improvement in health and gain in weight in most of them.

The rate of plasma protein regeneration has been studied mostly in the dog, and there is scarcely any literature available on human beings. The groups of workers under Whipple and under Weech[15] have thrown much light on this mechanism. The quantitative work with plasmapheresis of Whipple's group has shown that the ceiling of protein synthesis in the dog on an average diet is so high that it is technically impossible to remove as much as the dog synthesizes. They have found the ceiling to be over 100 Gm. per week for a 10 Kg. dog, or over 1.3 Gm. per kilogram dog daily. At this rate a 60 Kg. man should be able to synthesize 78 Gm. of plasma protein a day, or the equivalent of 1,150 cc. of plasma.

Elman's[16] recent report gives still more striking results. In dogs with experimental hypoalbuminemia he was able to determine that the ceiling of nitrogen utilization was equivalent to 11 Gm. of protein per kilogram of body weight daily. At this rate a 60 Kg. man would be able to synthesize 660 Gm. of protein a day. Were all this available for transfusion it would make available thirty-eight plasma transfusions, a total of over 9,500 cc. of plasma a day.

TABLE 6.—*J. F., Man Aged 22, Computed Blood Volume 7.2 Liters*

Date	Weight, Kg.	Transfusion/ Days	Total Amount Bled, Cc.	Per Cent Bled	Hematocrit, per Cent	Hemoglobin, Gm.	Red Blood Cells	White Blood Cells	Differential Count, Polymorphonuclears/ Lymphocytes	Reticulocytes, per Cent	Total Plasma Proteins, Gm. %	Albumin/ Globulin	Van den Bergh Units	Fragility	Bleeding, Cc.
8/26	90.6	....	.....	..	51	15.0	5,370,000	8,500	60/40	0.4	7.5	.....	...	.....	...
8/28	....	....	530	7	..	....	.....	.....	.....	...	...	.....	...	.....	530
9/ 2	....	2/5	1,060	15	..	....	.....	.....	.....	...	...	.....	...	.....	530
9/ 7	....	3/10	1,590	22	..	....	.....	.....	.....	...	...	.....	...	.....	530
9/14	....	4/17	2,120	29	..	....	.....	.....	.....	...	...	.....	...	.....	530
9/18	....	....	.....	..	..	....	4,860,000	6,550	50/49	0.5	7.8	.....	...	.....	...
9/21	....	5/24	2,660	37	..	....	.....	.....	.....	...	...	.....	...	.....	540
9/28	....	6/31	3,190	44	..	....	.....	.....	.....	...	...	.....	...	.....	530
9/30	....	....	.....	..	..	....	5,130,000	.....	.....	...	...	.....	...	.....	...
10/ 5	....	7/38	3,720	52	..	....	.....	.....	.....	...	...	.....	...	.....	530
10/12	....	8/45	4,250	59	..	....	.....	.....	.....	...	...	.....	...	.....	530
10/14	....	....	.....	..	..	....	.....	.....	.....	...	7.4	4.73/2.67	...	.....	...
10/19	....	9/54	4,800	67	..	....	.....	.....	.....	...	...	.....	...	.....	550
10/25	....	10/60	5,370	75	..	....	.....	.....	.....	...	...	.....	...	.....	570
10/28	....	11/65	5,920	82	..	....	.....	.....	.....	...	...	.....	...	.....	550
10/29	....	....	.....	..	49.5	15.8	5,660,000	.....	45/55	...	...	.....	...	.....	...
11/ 1	....	12/66	6,370	89	..	....	.....	9,050	.....	...	...	.....	...	.....	450
11/ 3	....	.....	.....	..	..	....	5,370,000	.....	.....	...	...	.....	...	.....	...
11/ 5	....	.....	.....	..	51.5	15.8	.....	8,550	.....	...	8.4	.....	...	0.44-0.34	...
11/22	97.0	.....	.....	..	..	....	.....	.....	.....	0.3	7.3	4.26/3.04	0.3	.....	...

TABLE 7.—*J. A. B., Man Aged 34, Computed Blood Volume 8.3 Liters*

Date	Weight, Kg.	Transfusion/ Days	Total Amount Bled, Cc.	Per Cent Bled	Hematocrit, per Cent	Hemoglobin, Gm.	Red Blood Cells	White Blood Cells	Differential Count, Polymorphonuclears/ Lymphocytes	Reticulocytes, per Cent	Total Plasma Proteins, Gm. %	Albumin/ Globulin	Van den Bergh Units	Fragility	Bleeding, Cc.
9/21	103	....	530	6	..	....	.....	.....	.....	...	....	.....	...	.....	530
9/27	...	....	.....	..	50	14.5	4,500,000	8,750	60/39	...	....	.....	...	.....	...
9/28	...	2/7	1,060	13	..	....	.....	.....	.....	0.3	7.86	.....	...	.....	530
10/ 5	...	3/14	1,590	19	..	....	.....	.....	.....	...	....	.....	...	.....	530
10/12	...	4/21	2,090	25	..	....	.....	.....	.....	...	....	.....	...	.....	500
10/15	...	....	.....	..	51	14.8	5,000,000	9,850	62/35	...	7.76	.....	...	.....	...
10/18	...	5/27	2,640	32	..	....	.....	.....	.....	...	....	.....	...	.....	550
10/21	...	6/31	3,190	38	..	....	.....	.....	.....	...	....	.....	...	.....	550
10/22	...	....	.....	..	..	....	.....	.....	.....	...	6.73	4.00/2.73	...	.....	...
10/26	...	7/36	3,750	45	..	....	.....	.....	.....	...	....	.....	...	.....	560
10/28	...	....	.....	..	50	....	.....	.....	.....	...	....	.....	...	.....	...
11/ 8	...	8/49	4,310	52	..	....	.....	.....	.....	...	....	.....	...	.....	550
11/16	...	9/57	4,840	58	..	14.5	5,040,000	.....	.....	...	....	.....	...	.....	530
11/17	...	....	.....	..	..	....	.....	9,650	.....	...	....	.....	...	0.44-0.34	...
11/19	...	....	.....	..	..	....	.....	.....	.....	...	....	.....	0.3	.....	...
11/26	104	....	.....	..	53	....	.....	.....	62/31	0.5	7.90	4.60/3.30	...	.....	...

Another indirect indication of the rate of protein synthesis by the human organism may be cited for what it is worth. In treating a case of second and third degree burns involving 20 per cent of the body surface with oral amino acids as the only source of nitrogen, one of us[17] found that the patient retained as much as 18 Gm. of nitrogen a day, maintaining his body weight and his plasma protein level. There is no assurance that all this was synthesized into proteins, but if one half of it had been so utilized the rate of protein synthesis would have been over 56 Gm. a day, or the equivalent of 800 cc. of plasma.

However, the ceiling of plasma protein synthesis is not necessarily identical with the ceiling of plasma

14. Cadham, F.: The Effects on Donors of Repeated Limited Blood Loss, Canad. M. A. J. **38**: 461, 1938.
15. Weech, A. A.: Dietary Proteins and Regeneration of Serum Albumin, Bull. Johns Hopkins Hosp. **70**: 157, 1942.
16. Elman, Robert; Charnas, Ray, and Davey, Harriet W.: The Ceiling of Utilization of Nitrogen: Effect of Continuous Venoclysis with the Amino Acids of Hydrolyzed Protein During Experimental Hypoalbuminemia, Arch. Surg. **47**: 216 (Aug.) 1943.
17. Co Tui: Unpublished data.

proteins available for donation. Another limiting factor intrudes itself, namely the development of shock on the withdrawal of more than 30 per cent of the blood volume and the slowness of reestablishment of the original volume. The study of Ebert, Stead and Gibson [18] on 6 donors from whom they bled 15.5 to 19.7 per cent of their determined blood volume shows that it takes at least seven to eight hours to reestablish this lost volume and even longer for the plasma protein to return to the initial level. But even operating under these new limiting factors a man should theoretically be able to donate 55 Gm. of plasma protein a day without shock intervening. Between the present limit of 17.5 Gm. every eight weeks and the theoretical possibility of 55 Gm. daily there is a range of 18,000 per cent. Within this wide range can be found a practical level for a full but safe exploitation of what may be called the plasma resources of the donating population.

The three principal findings of the present work may be stated as follows:

(*a*) In spite of the fact that so large a part of the red cells has been stored extracorporeally for at least twenty-four hours, the reinfusion of these cells into the donors who have given multiple transfusions has not been followed by an increase of blood cell destruction or by anemia. In donor 4, 6,300 cc. of blood had been taken and the red cells returned during a period of twelve weeks. This amount is 107 per cent of his total blood volume.

(*b*) The total plasma proteins have remained at the initial level.

(*c*) The albumin-globulin ratio as determined chemically has remained the same.

Finding *a* may be put to immediate use. In our opinion the postdonation anemia found in women and in donors of districts with malnutrition may be controlled by the reinfusion of the red cells. Malnutrition is now widespread in China, India and many European countries. As it becomes necessary to establish blood banks in these places the reinfusion of red cells may be expected not only to protect the donors against anemia but to make it possible for them to donate with at least the frequency practiced in this country. However, it must not be concluded from findings *b* and *c* that it is now safe to bleed donors as frequently as the present donors have been bled, provided the red cells are reinfused. While it is true that neither the total plasma protein level nor the albumin fraction has suffered a reduction, we cannot form a definite conclusion as to the distribution of other protein moieties until a more extensive electrophoretic study can be made. Thus, among other constituents it would be important to know what changes, if any, have occurred in the various globulin fractions on which immunologic processes are known to depend. It is also important not only that the donors shall not suffer from any ill effects, but also that the plasma contributed shall possess the therapeutic qualities equal to those of the plasma we are at present obtaining.

In other words, while it has been shown that it is illogical to use the rate of hemoglobin regeneration as pacemaker for the frequency of plasma donations, it has not yet been determined what other blood component is the logical pacemaker. In the present study the total plasma proteins, particularly the albumin, has been assumed to play this role, but until further data are available this must remain tentative. The problem is to find which one of the essential blood components gives way under the drain soonest: that component automatically becomes the pacemaker.

One caution, however, must be exercised in the reinfusion of cells, namely the necessity of avoiding pyrogenic reactions. The occurrence of such a complication is more serious psychologically in a donor than in a sick recipient. There are many commercial fluids which have been controlled for pyrogenicity, but where there is any doubt the pyrogen retentive filter as developed by two of us [19] will insure the production of a nonpyrogenic fluid.

It may be permissible to speculate on the possibilities of this study. The American Red Cross at present utilizes a random and purely chance donor population. To obtain the 5 million units of plasma required by the armed forces would require in the neighborhood of 832,000 donors, provided each donor donated religiously every eight weeks. An increase of only one donation per donor during this period would have increased the availability of donors by 100 per cent. And, if it is finally found safe to obtain weekly plasma donations, the availability would be increased by 800 per cent! If this should be the case the entire military plasma program could be supported by a population numbering approximately 120,000.

TABLE 8.—*Tiselius Pattern of Plasma Proteins of Donor C. P. After Successive Donations*

Initials	Transfusions	Albumin, per Cent	Globulin, per Cent				
			a_1	a_2	β	γ	γ
C. P.	None (control)	58.2	4.3	11.3	12.9	2.3	10.3
	After four.....	69.0	6.8	7.2	8.7	1.1	7.2
	After eight.....	67.4	3.8	7.73	9.57	4.33	7.15
	After eleven....	58.2	3.03	7.5	13.3	7.4	10.7
	After twelve...	61.1	4.18	8.36	12.68	4.75	8.93

The practical aspects of the routine reinfusion of red cells may now receive some consideration. To reinfuse the cells on the day subsequent to the withdrawal would necessitate the donor's making another trip to the bank and would not be practicable except in small towns or in such institutions as military camps or prisons, where the members are easily accessible. In blood banks which draw their donors from a population having to travel considerable distances to the bank, the drawn blood could perhaps be immediately centrifuged and the cells reinfused on the same day. This would entail a somewhat longer wait but might eliminate the problem of post-transfusion syncope. In our experience with centrifugation, most of the packing occurs in the first twenty minutes at 1,000 revolutions per minute, and thereafter the increase in packing is slight. In a program such as this so much more plasma would be made available that this small increment obtained by further spinning could be ignored altogether. This may be done with good conscience, since the plasma remaining with the cells will finally be restored to the donor in any case.

SUMMARY AND CONCLUSIONS

1. In a group of 3 donors, 1 giving three and 2 giving four full sized donations in one week, and in a second group of 3 donors giving full sized donations every week for nine and twelve weeks respectively, it was found that the total plasma protein and hemato-

18. Ebert, R. V.; Stead, E. A., Jr., and Gibson, J. G., Jr.: Response of Normal Subjects to Acute Blood Loss, with Special Reference to Mechanism of Restoration of Blood Volume, Arch. Int. Med. **68**: 578 (Sept.) 1941.

19. Co Tui and Wright, A. M.: The Preparation of Nonpyrogenic Infusion and Other Intravenous Fluids by Absorptive Filtration, Ann. Surg. **116**: 413, 1942.

crit returned to normal within forty-eight hours after the reinfusion of the red blood cells, after each donation.

2. The bilirubin level and reticulocyte count were found normal throughout the course of this study in all the donors. Likewise normal was the final red cell fragility test.

3. On the basis of this preliminary work (*a*) it is recommended that the practice of reinfusion of red cells into the donors be adopted where there is malnutrition in the donating population and/or where a large proportion of the donors are women.

4. A study is projected to determine the natural pacemaker of the frequency of plasma donations and thus to explore the feasibility of obtaining plasma at more frequent intervals than the prevailing eight week minimum.

5. It is necessary to use nonpyrogenic fluids in the reinfusions.

THE LESSONS TO BE LEARNED FROM A STUDY OF INFANT DEATHS

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The world may be in a chaotic state at the present time and it may be a very difficult period in which to live, but despite that fact less than half as many infants will fail to survive for at least one year than would had they been born in 1915, another period when war was raging over a large part of the globe.

Birth rates, total death rates and death rates for infants under 1 year of age have all shown a gradual decline during the years for which statistics are available. In 1915 the birth rate for the United States was 25.0 per 10,000 estimated population; in 1940 it was only 17.9. The total death rate in 1915 was 14.0 per 10,000 estimated population; in 1940 it was 11.0. The death rate under 1 year dropped from 99.9 per thousand live births in 1915 to 48.7 in 1940.

Had the infant death rates for 1915 prevailed in 1940 there would have been approximately 123,000 more deaths under 1 year of age during that year than actually occurred. Deaths under 1 month of age have decreased at a slightly less rapid rate (35.5 in 1927 to 29 in 1940) than those under 1 year, and those under 1 day have shown almost no decrease since 1927 (15.1 in 1927 to 13.9 in 1940), when statistics on deaths in these last two categories first became available.

Under 1 year of age there has been a decrease from almost all causes, but those reductions which have been most striking are in gastrointestinal infections and communicable diseases. The better care of food, especially milk, and the better therapy and increased prevention of contagious diseases have played a large part in the reduction of infant mortality. Infants under 1 month of age are less affected by these conditions, and those under 1 day of age not at all. Despite this decrease there has been much concern throughout the country over the relatively high death rates which still prevail during early infancy. In the last few years there has been a definite attempt on the part of the federal government through the Children's Bureau, the state and occasionally city governments through the local health departments, and by the general medical profession through individual and group effort, to lower the incidence of such deaths.

Before a problem can be attacked successfully, all phases of that problem must be fully understood. The factors concerned in infant deaths are manifold and include the genetic constitution of the parents, their state of health, their social status, the environmental, emotional and physical state of the mother during pregnancy, the length of gestation, the position of the fetus in utero, the length and conduct of labor, the method of delivery, the presence of abnormalities of uterus, placenta and umbilical cord, the immediate postnatal care of the infant and the later care of the infant.

In order to do the greatest amount of good, those states which most frequently contribute to an unfavorable outcome should be first attacked. Various studies have been made dealing with different aspects of conditions related to infant deaths, but not many of these have included large series of cases and the majority have been based on clinical findings without autopsy corroboration. A notable exception to this was the study undertaken in England, the general report of which was published by Eardley Holland and Janet Lane-Claypon [1] in 1926, and the one by J. N. Cruickshank [2] published in 1930. The former study is based on 1,673 autopsies and clinical histories of infants and fetuses born in different parts of England, while the latter paper is based on the postmortem examination of 800 infants who died during the first month of life, who were born in the Glasgow Royal Maternity and Women's Hospital.

Cruickshank concluded that 67.5 per cent died of asphyxia, birth injury or prematurity, 29.7 per cent of infections and 2.7 per cent of developmental abnormalities. Syphilis was present in less than 1 per cent.

Within the last year two studies have been reported in the United States, one from the New York Lying-in Hospital and Sloane Hospital for Women [3] and the other from the Chicago Lying-In Hospital.[4] Each of these has included over one thousand fetal and neonatal deaths, with approximately 90 per cent postmortem examination. As would be expected, they show a remarkable similarity in the major categories of etiologic agents, as may be seen in the accompanying table.

The Chicago Health Department in 1936 instituted an intensive study of the causes of infant death. For several years there had been an attempt in that city to reduce the mortality and morbidity among infants. Causes of death had been analyzed according to the diagnoses placed on death certificates, but it was realized that in order to plan a truly constructive program more accurate information regarding the relative importance of various conditions must be found. Too many diagnoses were vague and misleading and few were supported by postmortem examination.[5]

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This paper, in a symposium on "Factors in the Reduction of Neonatal Mortality," is published under the auspices of the Section on Obstetrics and Gynecology.

1. Holland, E. L., and Lane-Claypon, Janet E.: A Clinical and Pathological Study of 1,673 cases of Dead Births and Neonatal Deaths, Medical Research Council, Special Report Series, No. 109, London, His Majesty's Stationery Office, 1926.
2. Cruickshank, J. N.: The Causes of Neonatal Death, Medical Research Council, Special Report Series, No. 145, London, His Majesty's Stationery Office, 1930.
3. D'Esopo, D. A., and Marchetti, A. A.: The Causes of Fetal and Neonatal Mortality, Am. J. Obst. & Gynec. **44**: 1 (July) 1942.
4. Potter, E. L., and Adair, F. L.: Clinical Pathological Study of the Infant and Fetal Mortality for a Ten Year Period at the Chicago Lying-In Hospital, Am. J. Obst. & Gynec. **45**: 1054 (June) 1943.
5. Bundesen, H. N.; Fishbein, W. I.; Dahms, O. A., and Potter, Edith L.: Factors Responsible for Failure Further to Reduce Infant Mortality, J. A. M. A. **109**: 337 (July 31) 1937.

The Health Department obtained the support of the obstetricians, pediatricians and pathologists in the city, and autopsies were performed on the majority of infants who died under 1 year of age. These autopsy protocols were studied in relation to the clinical histories of the mothers and infants and a large amount of information was accumulated.[6] This study is still in progress and it is to be sincerely hoped that the figures will soon be made generally available and that they may find wide application.

As a result of this study of infant deaths and stillbirths, proof was available that there were three principal channels into which efforts to reduce deaths in the neonatal period should be directed. Trained obstetricians for many years had realized the importance of these conditions and in specialized hospitals attention was being directed toward them, but in general far too few people were cognizant of them and far too few hospitals were adequately equipped and planned. The three major fields into which effort must be directed are those necessary to control the three major causes of neonatal deaths—prematurity, birth trauma and infections.

PREMATURITY

Prematurity is a direct cause of approximately one fourth of all deaths occurring under 1 month of age and is a contributing factor in at least an additional one fourth. The ideal method of decreasing the number of deaths from this cause would be in preventing the premature onset of labor; up to the present time, however, no one has succeeded in doing this except in a few isolated cases. It is necessary, therefore, to improve the environment into which the premature infant is born if its chances of survival are to be increased.

Although a premature infant may suffer and die from any of the pathologic conditions affecting an infant born at term, there are many who fail to show pathologic lesions which can be discovered by any known chemical or histologic means. If the intrauterine environment could be closely enough simulated it should be possible to save many of the infants in the latter group. The immediate reason why the majority of otherwise normal premature infants die is inability to obtain oxygen through the inadequately developed lung. The nearer the infant is to term the greater is the capillary area which is in direct contact with the alveolar lumens. Early in fetal life each entire alveolus is lined by a continuous layer of cuboidal cells. As the fetus grows, capillaries gradually branch out from the septal vessels and push their way between the cuboidal cells, thrusting them aside so that the capillaries lie uncovered in direct contact with the air spaces. If the number of capillaries in contact with the air and capable of receiving oxygen is too small to support life, the infant cannot survive.

The kidneys in a premature infant are incompletely developed at birth. In the average infant glomerular development continues until about the thirty-fourth or thirty-sixth week of intrauterine life, and prior to this time an incomplete complement of glomeruli are present. Even at the normal time of birth, tubular development is very incomplete and in the premature period the infant is handicapped by greater immaturity of the tubular system.

The mucosa and musculature of the stomach and gastrointestinal tract in a premature infant are less able than in an infant at term to accomplish the preparation of food for use by the body. The digestive glands are smaller and fewer in number. The anatomic state of the digestive tube, however, bears more resemblance to the digestive tube of a more mature infant than does the anatomic state of either the lung or the kidney. Instead of undergoing a definite modification in pattern the change is largely one of continuous growth following the original design.

In order to provide the infant with the greatest chance of survival it is necessary to place it in an environment which will compensate as far as possible for the incompleteness of development. The higher the percentage of oxygen which is present in the inspired air, the greater the absorption which is possible. The more easily assimilable the food which is given, the less will be the effect of incompletely developed digestive glands. Human milk is the food of choice for all premature infants.

Cause of Infant and Fetal Death

Cause of Death	New York Lying-in Hospital and Sloane Hospital for Women,* per cent	Chicago Lying-In Hospital,* per cent
Anoxia	19.8	28.7
Primary prematurity	18.5	14.4
Congenital malformation	14.1	11.1
Birth trauma	11.6	13.0
Infections	8.1	4.7
Erythroblastosis	2.8	2.2
Hemorrhagic disease	2.1	0.3
Syphilis	0.6	0.2
Maceration and maternal toxemia	5.2	5.3
Maceration, no toxemia	13.5	11.9
Unknown, not macerated	3.0	6.5
Miscellaneous	0.7	1.7
Total mortality	3.87	4.28
Mortality over 1,000 Gm.	3.52	3.50
Total cases	1,000	1,173
Stillbirths		614
Deaths		559
Duration of Study	1935-1940	1931-1941

* Material slightly rearranged.

The epidermis gives little protection against bacteria which come in contact with the skin. Incomplete development of the body's defenses against infection make the premature infant more apt to succumb to bacterial invasion.

To give the premature infant the greatest chance for survival it should be under the care of a physician who is cognizant of its special needs, and of an attendant who is specially trained to take care of it. It should be in a place where constant heat is available for maintenance of body temperature, where humidity can be controlled to prevent undue drying of skin and respiratory system, where oxygen can be administered in order to compensate for inadequate pulmonary development, where breast milk is available in order that the least strain may be placed on the digestive system. It should be disturbed as little as possible and kept free from the possibility of infections. All clothing and bedding

6. Bundesen, H. N.; Fishbein, W. I.; Dahms, O. A.; Potter, Edith L., and Volke, Walter: Factors in Neonatal Deaths, J. A. M. A. **111**: 134 (July 9) 1938.

should be sterilized during laundering, all food and water should be sterile when administered, all attendants should be free of infection.

BIRTH TRAUMA

Birth trauma—the actual mechanical injury of the infant during birth—is the second principal cause of death which properly directed effort should be able to reduce. Intracranial hemorrhage is the most common form of fatal injury and is almost always due to abnormal pressure on the head. This may result from cephalopelvic disproportion, abnormal position of the head, abnormalities of uterine contractions or the improper application of forceps. Hemorrhage may be caused by any one of these conditions despite the most careful observation of the patient during the antepartum course and the exercise of the greatest skill in the management of labor and delivery. However, in general, the less adequate the training of the obstetrician and the poorer the facilities for adequate care at the time of labor and delivery, the greater the incidence of trauma will be.

Any attempt to decrease the number of birth injuries must be primarily directed toward improved education of the physician in attendance and toward improvement of the environment in which birth is accomplished. By expending effort in this direction, decreases in the number of deaths from other causes will also be brought about. There are numerous instances in which an entirely normal fetus succumbs during labor even when a hemorrhage has not occurred. The immediate cause of these deaths is usually anoxia, and, although at times due to cord and placental disturbances which are beyond the control of the physician, at other times they are associated with excessive maternal sedation or the mismanagement of complications that have arisen. The greater the skill of the obstetrician, the better will he be able to cope with all emergencies, and the fewer will be the deaths from all causes attendant on labor and delivery.

INFECTIONS

The third principal cause of death which may yield to well directed effort is infection. At the present time the lungs are the part of the body most frequently involved, although in some localities where delivery does not take place under sterile conditions there is still a high incidence of umbilical and cutaneous infections. Epidemic diarrhea takes an annual toll of lives which might be prevented if greater care was exercised in preparation of all material taken into the gastrointestinal tract.

The elimination of all pathogenic bacteria from the environment of the infant during delivery and after birth should be attempted. The less the chance of infection, the fewer infants will there be who succumb from this cause.

Except for malformations, the other conditions leading to infant death occur with considerably less frequency. This does not mean, however, that attention should not be directed to them. Although syphilis accounts for relatively few deaths in most communities, it is one cause that, with proper cooperation of patient and physician, could be completely eliminated. Abnormal fetal development, in our present state of knowledge, is almost the only condition which is not susceptible to amelioration.

PROGRAM OF CHICAGO HEALTH DEPARTMENT

Realizing that the greatest reductions in infant death could be brought about by measures directed toward the prevention of birth trauma and infections and in improving the care of premature infants, the Chicago Health Department, in cooperation with the physicians of the city, instituted a program directed toward this end. A committee, composed of representative members of various medical societies, hospital associations and the health department, drew up a set of rules governing the physical equipment and conduct of delivery rooms and nurseries and the medical and nursing care of all parturient patients and their offspring. The wisdom of these regulations was very evident and the hospitals and medical profession have cooperated to the utmost in putting them into effect. There have been a few revisions since the original code was established but they have been of minor character and, in the main, the entire program continues.

In order to assure better care of premature infants, all such infants have been cared for in especially equipped and especially staffed nurseries. An incubator ambulance is available when the infant is born at home or needs to be transported from one hospital to another. These nurseries can care only for premature infants and the methods and equipment employed must conform to the standards set up by the committee. Human milk can be obtained through the health department if it is not otherwise available. All infants are kept in the premature nursery until they weigh at least 2,500 Gm. Home conditions are investigated to make sure adequate care can be given the infant before it is discharged from the hospital. Public health nurses, if desired, are available to help the mother learn to care for her child.

The attempt to decrease the incidence of birth trauma has been primarily an attempt to improve the practice of obstetrics. Each hospital staff has arranged to have men with adequate training and qualifications available for obstetric consultation; all physicians without specialized training in obstetrics are required to obtain consultation before undertaking any type of operative procedure. The importance of antepartum care has been stressed, together with the importance of recognition and early treatment of various abnormal conditions that may arise during pregnancy, labor and delivery.

It has long been realized that infections play a major role in the production of maternal mortality, and this study has stressed their importance as a cause of infant death as well. In order to limit infections and prevent their being carried to the obstetric patient from other parts of the hospital, hospitals caring for maternity cases must have delivery rooms and rooms for convalescence of patients which are used for no other purpose. The nurses in an obstetric service and in the newborn nursery must limit their attention to such patients. The technic of care, the equipment and the physical arrangement of the nurseries are so devised that the possibility of infection through the gastrointestinal tract, skin or lungs is reduced to a minimum. An attempt is made to observe an aseptic technic comparable to that used in an operating room.

Death rates in the city of Chicago have shown a much more striking decrease than those for the country as a whole. Although the rate in 1915 (125 per thou-

sand live births) for infants under 1 year was almost 25 per cent higher than that for the registration district of the United States (99.9 per thousand live births) the rate in 1942 was 40 per cent less (Chicago 28.4 per thousand live births, United States 48 per thousand live births). The rate under 1 day in Chicago in 1940 was 10.8 and under 1 month 20.3, while in the United States as a whole it was 13.9 under 1 day, and 29 under 1 month. Had the rate for the country as a whole prevailed in Chicago in 1942 there would have been 1,345 additional deaths in that city in infants under 1 year of age. Had the city's own rate for 1916 prevailed there would have been 6,615 deaths under 1 year in excess of those which actually occurred.

On the basis of the pronounced reduction in deaths that has taken place at all intervals of the first year of life, the conclusion is warranted that steps taken to put into effect procedures which are known to aid in reduction of infant deaths will bring about desirable results. The statement is frequently made that it is impossible to determine the cause of death in the majority of infants and that little is known of the pathologic conditions affecting this age group. While it is true that a small percentage of infants die in the absence of any discernible cause, the etiologic agent, in the great majority, can be discovered without difficulty. There is a constant attempt, as is shown by the flow of papers pertaining to specific phases of the problems of parturition and early infant life, to increase our understanding of the various associated problems.

Our greatest need at the present time, however, is not for more knowledge in the possession of a few investigators but for greater dissemination of that information which is already available. When one states that the causes of infant death are little understood, it is merely an indication that one is little interested in understanding.

If all infants could be delivered by skilled obstetricians in places suitable for birth and could be subsequently cared for in a way known to give the best chance for survival, the general death rates would greatly decrease. The fact that in 1942 the rate for Chicago was 40 per cent less than that for the country as a whole indicates that at least 40 per cent of the deaths in the country are preventable on the basis of our present knowledge. There is no reason to believe, however, that even this rate represents a basic level. The physicians and citizens of the Chicago area expect to be able to continue to decrease the proportionate number of deaths year by year as they have done in the past.

What has been accomplished in this city can be accomplished anywhere if a sufficient number of people have a great enough desire.

SUMMARY

Statistical studies show that the leading preventable causes of infant deaths are prematurity, birth trauma and infections. The institution of procedures designed to combat these conditions will result in a great salvage of infant lives. That this statement is true is proved by the difference in the infant death rate for a city like Chicago, where a definite program has been carried out, and that for the United States as a whole. The death rate under 1 year of age in Chicago is 40 per cent less than that for the total United States.

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THE CARE OF THE PARTURIENT WOMAN IN RELATION TO NEONATAL MORTALITY

EARL C. SAGE, M.D.

OMAHA

It has been said that "America values group judgment." For this reason I have pooled the combined views of the pediatric and obstetric staffs of the University of Nebraska College of Medicine and have incorporated the evidence obtained from other teaching centers in this discussion.

Neonatal (first month of life) deaths approximate 70,000 annually. In 1941, the last year for which statistics are now available, fetal and neonatal deaths aggregated 144,692. This is more than the number of deaths occurring among individuals in the age group of 5 to 29 years (99,610) and is 10.4 per cent of the total deaths for all ages and all causes (1,397,642).[1] Since 1937 the infant and neonatal death rates have been declining, although the actual number of stillbirths and neonatal deaths have increased because of the increase in births from 2,203,337 in 1937 to 2,513,427 in 1941.

According to Potter and Adair[2] the major causes of neonatal mortality are prematurity, birth injury, anoxemia, asphyxia, infection and exposure to unfavorable

Infant and Neonatal Deaths per Thousand Live Births

Year	First Year	First Month	Second to Twelfth Months	Still-births
1941	45.3	27.7	17.7	29.9
1940	47.0	28.8	18.8	31.2
1939	48.0	29.3	19.3	32.0
1938	51.0	29.6	22.1	32.1
1937	54.4	31.3	23.9	33.4

conditions of external environment immediately after birth. It has been stated that neonatal mortality may be reduced more than a third, but many of these disasters are inevitable. Among the factors influencing the condition of the infant at birth Clifford and Irving[3] tabulate the following:

1. Vitality of the germ plasm: congenital defects and debility.
2. Maternal abnormality: anemia, infection, dietary deficiency, heart disease, toxemia.
3. Fetal diseases: syphilis and erythroblastosis.
4. Fetal anoxemia: placental origin: gross infarction, premature separation, placenta previa.
5. Fetal maturity at birth.
6. Factors operating at delivery: cephalopelvic disproportion, length and type of labor; method of delivery: normal, low forceps, mid or high forceps, cesarean section, version, traction, suprapubic pressure.
7. Analgesia: morphine, barbiturates, ether, nitrous oxide.
8. Anesthesia: ether, chloroform, cyclopropane, nitrous oxide, local, spinal, caudal.
9. Skill and experience of anesthetist.
10. Skill and experience of obstetrician.

In that the immensity of the subject precludes a thorough discussion of all these factors relating to neonatal mortality, only a few of the causes will be considered in detail, namely asphyxia, prematurity, birth trauma and maternal complications.

This paper, in a symposium on "Factors in the Reduction of Neonatal Mortality," is published under the auspices of the Section on Obstetrics and Gynecology.

1. Daily, Edwin F.: Personal communication to the author.
2. Potter, Edith L., and Adair, Fred L.: Fetal and Neonatal Deaths, Chicago, University of Chicago Press, 1940.
3. Clifford, Stewart H., and Irving, Frederick C.: Analgesia, Anesthesia and the Newborn Infant, Surg., Gynec. & Obst. **65**: 23 (July) 1937.

ASPHYXIA

According to several observers, asphyxia is the most important and frequent cause of neonatal death. The neonatal death rate has remained surprisingly constant for many years, while our pediatricians have reduced infant mortality at a rapid rate. The infant mortality rate per thousand live births was 64.6 during the first year of life in 1930 and 45.3 in 1941, while the neonatal mortality has been reduced from 35.7 to 27.7 per thousand live births during corresponding years.

As stated by Clifford,[4] "much can be accomplished along obstetric lines to minimize the effects of unavoidable intrauterine asphyxia in some patients and to prevent the occurrence of fetal asphyxia in others." It is suggested that when advances are made in prevention and management of fetal asphyxia the result will be a significant drop in fetal and neonatal mortality and morbidity. Careful study of the complications of pregnancy which are potential causes of fetal asphyxia may result in methods of obstetric management beneficial equally to mother and to child. Irving's contribution to the management of placenta previa is an example of such an approach.

Irving[5] studied 308 cases of placenta previa equally divided among three chronologic groups, with each group representing a different method of management. The method employed was found to exert a pronounced influence on both the maternal and the total fetal and neonatal mortality. The successful plan of treatment was as follows: Patients showing no evidence of uterine infection with infants thought to have a good chance of survival were all delivered by cesarean section; similar patients with dead infants, with infants estimated to weigh less than 4 pounds (1.8 Kg.) or with infants grossly malformed at x-ray examination were all delivered by Braxton Hicks's version or by using the Voorhees bag. Infected patients were delivered by cesarean section followed by hysterectomy with drainage, whatever the fetal condition. This plan of treating placenta previa resulted not only in a reduction of total fetal and neonatal mortality from 47 to 20 per cent but also in a reduction of maternal mortality from 12 to 2 per cent.

The prevention of fetal asphyxia demands methods of obstetric anesthesia and analgesia that do not produce fetal anoxemia or injure the fetal respiratory center. The answer to this prayer, theoretically, is continuous caudal anesthesia. In expert hands this procedure is simple, but, as stated by Mengert, "it is just as good as the man who gives it." When properly used there is no doubt that continuous caudal anesthesia for childbirth represents one of the greatest advances in modern science. This method must not be employed by those who are not adequately trained both in the administration of anesthesia and in obstetrics. With this type of anesthesia, primary respiration in the infant is established promptly, and maternal anesthesia is satisfactory without producing harmful fetal asphyxia. As Lundy[6] remarked, "If continuous caudal anesthesia is to be employed with safety, the anesthetist must be both adept in the technic of the method and fully aware of all potentialities involved—both the desirable features and hazards. For the present, at least, the use of the method should be confined to institutional practice by persons trained and experienced in caudal anesthesia." Caudal anesthesia requires both technical skill and institutional supervision.

A few fundamental principles in the actual therapy of neonatal asphyxia should be stressed:

1. Gentleness is of greatest importance and should be exercised in direct relation to the severity of the asphyxia.

2. A patent respiratory tract is essential. Oxygen must reach the alveoli of the infant's lungs.

3. Body heat must be maintained and in the premature infant this becomes vital.

4. There is no more rationality in slapping an unconscious asphyxiated infant than in submitting a person rescued from drowning or suffering from a fractured skull to such treatment. Similar condemnation must be made of all violent forms of resuscitation, including Schulte swinging, dilation of the anal sphincter, hot and cold tubbing and dousing with ether.

PREMATURITY

Prematurity takes precedence over almost any other primary or contributing cause of infant deaths. Many observers consider an infant premature if it weighs 2,500 Gm. (5½ pounds) or less at birth. It is extremely difficult to arrive at a satisfactory classification of infant deaths, but postmortem examination should be, and could be, much more widely used than it is at present. Although necropsy may not reveal the cause of death, it is important to have the normal character of the organs established as it is to discover pathologic changes. For the past two years, at the University of Nebraska Hospital, examinations were made on 100 per cent of the stillborn fetuses and of infants who died before leaving the hospital. From July 1940 to May 1943 there were 1,224 deliveries with 66 autopsies on newborn and stillborn infants, 48 of which were equally divided between prematurity and stillbirth.

The lapse of a few minutes may determine whether a child will be born alive or dead, and, to obtain an accurate picture of the mortality in an obstetric hospital, stillbirth and neonatal (first month of life) deaths must be discussed together.

Mortality rates are much higher for premature infants than for those at term. It is well known that the mortality rate of premature infants increases decidedly in the low birth weight group. Bundesen and his co-workers[7] of the Chicago Board of Health, in studying 1,043 infant necropsies, found that the largest single cause of death was prematurity (premature infants without demonstrable pathologic lesions), with intracranial hemorrhage and malformations comprising the other two large groups. It should be remembered that no fetal autopsy is complete without examination of the placenta. The fetal surface should be examined for hematomas, tumors and excessive degenerations. The maternal surface may show evidence of infarcts or of compression caused by blood clots which resulted from premature placental detachment. Then serial sections should be cut through the entire thickness of the placenta. Prematurity in itself should not be considered an acceptable cause of death until other possibilities have been eliminated.

The incidence of prematurity in any series of deliveries is usually between 5 and 6 per cent. The

4. Clifford, Stewart H.: Asphyxia of the Fetus and the Newborn Infant, Proc. Am. Cong. Obst. & Gynec. (1939) **1**: 258, 1941.

5. Irving, F. C.: A Study of Three Hundred and Eight Cases of Placenta Previa, Am. J. Obst. & Gynec. **32**: 36 (July) 1936.

6. Lundy, John S.; Adams, R. Charles, and Seldon, Thomas H.: Continuous Caudal Anesthesia or Analgesia, J. A. M. A. **122**: 152 (May 15) 1943.

7. Bundesen, H. N.; Fishbein, W. I.; Dahms, O. A.; Potter, Edith L., and Volke, Walter: Factors in Neonatal Deaths, J. A. M. A. **111**: 134 (July 9) 1938.

neonatal mortality for premature infants was 20.7 per cent in contrast to 0.9 per cent for term infants delivered at the Chicago Lying-In Hospital in the period between 1931 and 1939.

If mortality is calculated in relation to weight at birth, the increased likelihood of survival with increasing weight is clearly shown. In 1935 Dunham [8] of the U. S. Children's Bureau showed that the mortality of 3,881 premature infants delivered in six large obstetric hospitals was 95 per cent when the infants weighed under 1,000 Gm., 71.5 per cent when the infants weighed from 1,001 to 1,500 Gm., 32.5 per cent when the infants weighed from 1,501 to 2,000 Gm., and 8.7 per cent when the infants weighed from 2,001 to 2,500 Gm. The total mortality for the entire group was 25.3 per cent. Until some method of preventing premature labor is discovered, this will continue to be one of the largest contributing factors in the production of neonatal deaths. According to Potter and Adair [2] the combined neonatal death rate and intrapartum stillbirth rate for premature infants is approximately eighteen times as great as the rate for those at term.

Miller [9] found that the birth weight of the premature infant is the single factor almost without exception that determines the survival of the infant, whether delivered spontaneously, by low forceps, or by cesarean section. Other pertinent observations of Miller are:

1. Any increase in the incidence of prematurity will increase the neonatal mortality rate and hence the total infant mortality rate, regardless of the method of delivery.

2. The high incidence of premature births found among cesarean deliveries in this study was shown to be due to the fact that mothers with certain complications of pregnancy were delivered by this method most frequently.

3. To discuss neonatal or total infant mortality rates without considering the full term infant as a distinct entity can only add to an already confusing problem.

4. The determining factor in the survival of the full term infant is the complication of pregnancy in the mother, rather than the type of delivery used.

The treatment of the premature infant presents four major problems: (1) maintenance of body temperature, (2) proper nutrition of the infant, (3) prevention of cyanotic attacks and (4) prevention of infection.

BIRTH TRAUMA

Potter [10] stated that in a broad sense the term "birth trauma" may be used to include any condition which affects the fetus adversely during labor or delivery. In a stricter sense it is probably better to reserve this term to hemorrhage resulting from contusions and lacerations or fractures caused by mechanical factors.

The intracranial cavity is the most common site of fatal traumatic lesions in the fetus. Distortion of the shape of the fetal head as it passes through the birth canal may cause a laceration of the vein of Galen or the membranes which support the brain. Hemorrhage results, and death is usually due to the effect of increased cranial pressure on the respiratory center. Vitamin K will not stop these massive hemorrhages, but there is basis [11] for the belief that certain infants have a tendency to bleed following relatively minor trauma and that unusually high prothrombin times may well account for such unnatural tendencies to bleeding. Vitamin K administered intravenously to the mother before delivery effectively prevents prothrombin deficiency in the newborn infant and probably serves to check such bleeding and to render harmless a slow oozing hemorrhage. Our staff members employ vitamin K routinely in all labors and believe that this therapy is particularly valuable when the infant is likely to be premature; also in prolonged labors or if operative delivery of any type is anticipated.

Interference with transfer of oxygen through the umbilical cord from any cause will result in injury to fetal tissues and, if sufficiently severe and prolonged, will cause death. The practice of abnormally prolonging the second stage by pressure on the perineum during general anesthesia should be discouraged, as it may produce a serious degree of fetal asphyxia. Conversely, if the cervix is fully dilated, shortening of the second stage of labor by low forceps delivery and episiotomy may reasonably be expected to reduce the incidence and degree of fetal asphyxia (Clifford [4]).

Potter [10] has pointed out that different methods of delivery show definite variation in the incidence of intracranial hemorrhage. When the total death rate for each type of delivery and the incidence of intracranial hemorrhage are both taken into account it was found that 1 out of every 25 infants (4.3 per cent) delivered by version and extraction is born dead or dies in the neonatal period. The next highest mortality from intracranial hemorrhage is found in delivery by mid and high forceps, 1 in 33 (3.2 per cent), and is followed by breech delivery with 1 in 50 (2.2 per cent). The incidence is considerably lower in the remaining types of delivery: cesarean section 1 in 110 (0.9 per cent), low forceps 1 in 330 (0.3 per cent), natural cephalic delivery 1 in 500 (0.2 per cent).

In breech deliveries, more bad results have come from attempting to deliver through an undilated os and against a resistant cervix than from any other single cause. The practice of pulling with forceps against a resistant cervix has resulted in injury to the fetal head as well as in severe laceration of maternal soft parts and is to be condemned. The function of forceps is not that of dilation.

MATERNAL COMPLICATIONS AFFECTING NEONATAL MORTALITY

There is a high incidence of prematurity, stillbirth and neonatal death in parturient women with hypertension, albuminuria or edema during pregnancy, probably accounted for by placental lesions such as infarction and premature syncytial degeneration.[12] In a series of 52 toxemia of pregnancy patients in 1,091 obstetric admissions at the University of Nebraska Hospital from April 1940 through July 1942 we encountered 9 fetal deaths, nearly all stillbirths, a fetal mortality of 17 per cent.

Dieckmann and Brown [13] reported a fetal mortality of 5 per cent in mild cases of eclampsia and 25 per cent in severe cases of preeclampsia. Corwin and Herrick [14] reported a fetal mortality of 12 per cent in mothers with mild preexisting hypertension and 69 per cent

8. Dunham, Ethel: Personal communication to Potter and Adair: Fetal and Neonatal Deaths, p. 121.

9. Miller, Herbert C.: The Effects of the Various Methods of Delivery on Fetal and Neonatal Mortality Rates, Proc. Am. Cong. Obst. & Gynec. (1939) **1**: 303, 1941.

10. Potter, Edith L.: Birth Injuries, Proc. Am. Cong. Obst. & Gynec. (1939) **1**: 331, 1941.

11. Bohlender, George P.; Rosenbaum, W. M., and Sage, E. C.: Antepartum Use of Vitamin K, J. A. M. A. **116**: 1763 (April 19) 1941.

12. Dexter, Lewis; Weiss, Soma; Haynes, Florence W., and Sise, Herbert S.: Hypertensive Toxemia of Pregnancy, J. A. M. A. **122**: 145 (May 15) 1943.

13. Dieckmann, W. J., and Brown, Ira: Hypertension and Pregnancy, Am. J. Obst. & Gynec. **36**: 798 (Nov.) 1938.

14. Corwin, J., and Herrick, W. W.: The Toxemias of Pregnancy in Relation to Chronic Cardiovascular and Renal Disease, Am. J. Obst. & Gynec. **14**: 183 (Dec.) 1927.

in severe cases of the same condition. Tyson and Bowman [15] showed that, provided the fetus survived the neonatal period, there were no demonstrable ill effects later from preeclampsia and eclampsia. Dexter and his co-workers [12] did not detect hypertension or water retention in the newborn babies of toxemic and edematous mothers.

Mussey and Hunt [16] reported 225 cases of toxemia of pregnancy treated by conservative management of pregnancy and parturition. Fetal mortality may be as high as 50 per cent in cases of severe cardiovascular disease with nephrosclerosis as compared to 3.5 per cent in cases of mild preeclampsia and 19.3 per cent in cases of severe preeclampsia. There were no fetal deaths in 13 cases of mild chronic hypertensive disease with superimposed mild preeclampsia. These authors remark that the probability of survival among babies born to women suffering from severe toxemia is decidedly less than normal; this is especially true of premature babies. Continuation of pregnancy to term, however, may not be desirable, as the fetus may die in utero if overwhelmed by the maternal disease in the course of more or less severe toxemia.

Plass [17] reported 80 cases of eclampsia with the survival rate among the 84 infants (four sets of twins) as 53.6 per cent, the infant mortality amounting to 46.4 per cent. The toxemia appears, therefore, to have been the direct cause of the high fetal death rate either by inducing or necessitating premature delivery or by producing intrauterine fetal death. Exclusion of all "previable" children weighing less than 1,500 Gm. reduced the fetal and infant fatality rate in this series to 33⅓ per cent.

Fortunately the incidence of toxemia of pregnancy in the United States is declining. The maternal mortality rate from toxemias is low in Nebraska (3.6 per 10,000 live births), the only other states having a lower percentage being North Dakota, Oregon, Rhode Island and Idaho in the order named.

Peckham [18] studied 623 consecutive cases of toxemia of pregnancy in their relation to fetal mortality and concluded that "it might well be inferred that, in a toxemia severe enough to cause some concern for the mother, the result to the child is sufficiently hazardous so that temporizing with the patient for the sake of the offspring is not justifiable." The fetal mortality in patients who developed the toxemia during the last month of pregnancy was low, 2.84 per cent. A steady increase obtained with each month of earlier development. In two fifths of the women in whom the toxemic process developed prior to the seventh month but carried to a period of theoretical viability, the child was either stillborn or died in the first two weeks of life. Conversely, the highest fetal mortality figures were found in patients allowed to progress the longest time between the development of toxemic signs and the delivery of the child. The risk to the fetus increased directly with the length of time elapsing between the onset of the toxemia and delivery. A total fetal mortality percentage of over 25 prevailed in this series of 623 consecutive deliveries of patients suffering from the various toxemias of pregnancy. The fetal mortality in eclampsia was 48 per cent. The fetal mortality for the general clinic population was 5.5 per cent.

Bloxsom [19] reviewed 100 consecutive cases of cesarean section to study the effect of different factors on asphyxia of central origin occurring in the infants. Forty-two infants had varying degrees of asphyxia, which was fatal in 6 cases. Three of the six deaths were of premature infants with especial susceptibility to asphyxia. When infants were allowed a test of labor, the incidence of asphyxia showed a decrease of 25 per cent. This observer felt that the failure to condition the infant mechanically by uterine contractions or passage through the birth canal was responsible for many cases of asphyxia. He recommended that (1) the infants should be at full term, if possible before cesarean section is done, (2) no analgesic should be administered to the mother before cesarean section, (3) local or spinal anesthesia should be employed if possible in the interest of the infant and (4) if time permits, and there are no contraindications, the mother should be allowed to have some labor pains.

Irving's [5] contribution to the management of placenta previa has already been mentioned with the reduction of total fetal and neonatal mortality from 47 to 20 per cent.

Falls [20] recently reported 97 cases of premature detachment of the placenta with a fetal mortality of 20 per cent. Tabares y Boyez [21] reported 62 cases of the same condition with a fetal mortality rate of 85.48 per cent. Cosgrove and Conway [22] reported 236 cases of premature separation of the placenta with a total fetal death rate of 49 per cent. It is evident that abruptio or ablatio placentae is one of the gravest accidents with which the obstetrician has to deal and accounts for many fetal deaths. When the placenta is completely detached the maternal mortality is from 5 to 10 per cent, and from 95 to 100 per cent of the infants are lost. In a partial detachment of the placenta, when the fetus is viable and proper equipment and personnnel are available, a timely cesarean section may be done in the interests of the child.

In the management of pregnancy complicated by heart disease, tuberculosis, diabetes, some of the anemias, hyperthyroidism, chronic infection of the urinary tract and antepartum hemorrhage, induction of premature labor may, and often does, prove to be the wisest and most rational and effective treatment. The inescapable by-product of these problems is a premature baby. Is it not preferable to deal with a premature baby and a live mother who in many instances may have been saved from an untimely death or from serious impairment of health, rather than risk and perhaps lose the lives of both?

Any discussion of maternal complications which affect fetal and neonatal mortality would be incomplete without mention of certain major problems concerning which our knowledge is all too inadequate. Such problems, including the initiation and mechanism of labor, premature labor, premature rupture of membranes, primary uterine inertia and the physiology of fetal respiration, offer fertile fields for further investigation.

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SUMMARY AND CONCLUSIONS

1. Neonatal deaths (first month of life) approximate 70,000 annually in the United States. Total fetal and neonatal deaths in 1941 totaled 144,692.

2. Since 1937 the infant and neonatal mortality rates have been declining, although the actual number of neonatal deaths and stillbirths has increased because of the increase in births.

3. The infant mortality rate for the first year of life in 1941 (U. S. Bureau of Census statistics) was 45.3 per thousand live births, reduced from 64.6 in 1930. This is a reduction of 19.3 per thousand live births as compared to 1930.

4. By contrast the neonatal mortality was 27.7 per thousand live births in 1941 as compared to 35.7 in 1930, a reduction of only 8 per thousand live births. This is a creditable record of progress, but it can and will be improved on. The reduction of neonatal mortality is largely the responsibility of the obstetrician, but the pediatrician likewise has a joint responsibility. The realization of our joint responsibility toward neonatal problems is one of the most encouraging advances made in this field.

5. A knowledge of the anatomic, physiologic and chemical peculiarities of the newborn is essential to an adequate understanding of neonatal problems and indispensable in their proper care.[23]

6. Pathologists, physiologists, obstetricians, pediatricians and anesthetists have collaborated in the study of anoxia and asphyxia. As obstetricians we must make a careful study of the complications of pregnancy which are potential causes of fetal asphyxia, and these studies may result in methods of obstetric management equally beneficial to mother and to child. We have the welfare of 2 patients under consideration.

7. All known analgesics and anesthetics administered to the mother have a certain degree of injurious effect on the fetus (in proportion to the amount administered) with the exception of continuous caudal anesthesia. The ultimate evaluation of any given method of anesthesia will depend on the price paid for the mother's comfort in terms of infant mortality.

8. A few fundamental principles in the actual therapy of neonatal asphyxia should be stressed, namely gentleness, patency of the respiratory tract, use of oxygen, maintenance of body heat and avoidance of rough handling of the infant. Primary oxygen want is responsible for many fetal deaths.

9. Prematurity is one of the most potent contributory factors in neonatal and infant mortality and is the most important single factor in the causation of neonatal asphyxia. Prematurity in itself should not be considered an acceptable cause of death until other possibilities have been eliminated. Postmortem examination should be, and could be, much more widely used in this respect. The incidence of premature births is usually between 5 and 6 per cent. Obstetric analgesia with morphine, scopolamine or phenobarbital should be avoided when dealing with a premature infant, as it interferes seriously with the respiratory function of the infant.

10. If mortality is calculated in relation to weight at birth, the increased likelihood of survival with increasing weight is clearly shown. We must understand the importance of prolonging intrauterine life as long as safety for the mother will permit, to increase the viability of the prematurely born infant.

11. Recognition of the joint responsibility of obstetrician and pediatrician will tend toward a clearer understanding of the hazards associated with the adjustment of the premature infant to extrauterine life. Especial emphasis should be placed on maintenance of body heat, prevention of cyanosis, prevention of infection and proper nutrition.

1234 Medical Arts Building.

23. Parmelee, A. H.: The Pediatrician Looks at Obstetric Analgesia and Anesthesia, paper read at the Symposium on Obstetric Analgesia and Anesthesia, University of Nebraska College of Medicine, May 28, 1943.

THE CARE OF THE FETUS DURING LABOR

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This paper is based on the management of the labor in 6,000 women about equally divided among Caucasian and Negro. Most were clinic patients who had inadequate antepartum care and many none at all. Some came from a great distance and had been neglected in long preliminary labor, often accompanied by unsterile vaginal examinations.

Uppermost in the therapy of each individual case was the ambition to recover a live and uninjured mother, but early in the series more and more interest was taken in the care of the fetus, and time and energy were counted as not wasted in devising methods to enhance its welfare and, in spite of its often bleak cultural and economic outlook, to saving it in addition to the mother. The fullest satisfaction was derived from obtaining a live mother and a live and healthy infant where the outlook was most hopeless. These methods, most of which are common knowledge if not in common usage of the profession, will be outlined in this thesis. In passing, however, it is not amiss to state that conservative measures have proved more valuable than more radical ones, and most fortunately, as a rule, those benefiting the mother have been the ones best for the fetus.

TEST OF LABOR

Paramount in the management of labor is the possession of a distinct and inclusive definition of a test of labor. A perusal of the pertinent literature reveals extreme confusion.[1] In 1933 Rudolph divided the authorities on the subject into two classes, one anatomicophysiologic who defined a test of labor as one beginning at the full dilatation of the cervix and defined in number of hours of "second stage labor." The other, the clinical school, defined test of labor as a variable number of hours of uterine pains. As seen from several paragraphs from Rudolph's article, variability is the only characteristic common to all the definitions. No wonder some technically trained experts glibly license themselves to do all sorts of operative procedures on the defenseless parturient! As the time honored word implies, labor is a physiologic procedure in which the chief factor is the amount of foot pounds of energy expended. This energy is mainly expended to increase intermittently the hydrostatic pressure within the uterus. The pressure is transmitted equally throughout the

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1. Bailey, H.: Am. J. Obst. & Gynec. **12**: 550 (Oct.) 1926. King, E. L., ibid. **35**:482 (March) 1938. Rudolph, Louis, ibid. **25**: 840 (June) 1933.

uterus so that the bulging membranes, and later the head, act as tampons to help dilate the cervix. The effectiveness of this process is influenced greatly by many factors. These include size of presenting part, size of pelvis and the ease of dilatation of the cervix. Rudolph states that the ease of dilatation of the cervix is dependent on the presence of retraction by maintained contractions of the longitudinal muscles of body of the uterus. If this is true, the uterus progressively after each contraction should become more firm. Yet even in the latter part of the first stage the normal uterus is soft between contractions. Further studies should be devoted to determine factors which influence the ease of this process.

In normal uterine contractions the muscle of the uterine wall slowly contracts firmly for a period of about forty seconds, raising the intrauterine pressure to 30 or more millimeters of mercury, and then slowly relaxes to a resting stage of a minute and a half up to five or more minutes. The intrauterine pressure between contractions is normally 5 to 10 mm. of mercury. In some patients between contractions the tone of the uterus is maintained high at 10 to 20 mm. Yet the contractions may or may not differ in amplitude and frequency from the normal. These high intrauterine pressures between contractions have been observed (1) in patients diagnosed as presenting the dystocia dystrophy syndrome, even in those without cephalopelvic disproportion and (2) in patients who had received oxytocics.

Now during the second stage of labor, i. e. from full cervical dilatation to delivery of the fetus, there is a second source of energy applied from the partially voluntary contractions of the abdominal muscles which merely increases the intrauterine pressure by a maximum of 40 to 100 mm. of mercury. This increased pressure is usually enough to expel the fetus in two hours or less. During the second stage the amount of pounds pressure effective in propelling the infant and produced by the uterus has been calculated to be 10 to 20, and the amount added by the abdominal muscular contractions has been calculated to be 10 to 28, making a total of 20 to 48 pounds.[2]

From the very first in the study of the series of labors, an effort was made to determine a labor test that (*a*) practically all parturients and their fetuses could tolerate, (*b*) 95 per cent of whom would be delivered spontaneously before its completion and that, after taking the test and failing, both mother and child would be able to survive the artificial delivery measures necessary. The trial and error method gradually reduced the difference between a test too strict and one too lenient but never did entirely eliminate clinical judgment, and the final test, therefore, is somewhat elastic. After six years of study in 6,000 deliveries the test evolved thus: Test of labor includes uterine contractions lasting forty seconds every two to five minutes over a period of time of twenty to twenty-four hours with noticeable progress, the parturient being supported meanwhile with water, dextrose, vitamins and oxygen if necessary, plus proper sedation. At the end of this period in most instances the fetus will have been born; in those not, the head will be at least in midpelvis, where it may be delivered by forceps, or still floating, when low or extraperitoneal cesarean section may be done safely. By following this rule, one can reduce operative delivery to about 3 per cent, forceps delivery approximately two and one half per hundred and cesarean section once in 200 cases. Version and extraction are reserved for transverse presentation only. These results are approximately those given by McCord,[3] Hillis[4] and Kay.[5] No one can deny that their results were good.

Because of the ever present possibility of necessity for cesarean section, no vaginal examinations were done and a watery solution of an antiseptic was instilled into the vagina every four hours during labor. There was some evidence of its value; at least it could do no harm. One can be trained to learn nearly as much from rectal examination as from vaginal.

During the course of labor there are two important considerations, (1) the degree of progress and (2) evidences of exhaustion of either mother or fetus. The progress may be determined by rectal examination and expressed in terms of dilatation and effacement of the cervix and the descent of the presenting part. Exhaustion of the mother is made evident by dehydration, rapid pulse rate, undue restlessness and alterations in uterine contractions and, very rarely, development of a contraction ring in the lower uterine segment. For the fetus, changes in the heart rate, especially slowing or irregularity, indicate hypoxia. All types of exhaustion in either of the patients are best treated by hydration, dextrose, vitamins, oxygen and sedation rather than by forced delivery, as is far too often employed.

No woman in labor has been seen who has not been able to tolerate this test, provided reasonable attention has been paid to the therapeutic measures mentioned. No fetus has been seen that could not safely survive this test except in case of complications as prolapse of cord, prolapse of arm in transverse presentation or extensive premature separation of the placenta. In the definition of the test no mention was made of the condition of the cervix. However, full dilatation for between two and three hours should precede forceps delivery, and, if the uterine contractions are far apart and progress is being made, a longer time may be allowed. Forceps operation is considered to be very simple, yet even in the hands of experts injuries occasionally occur and, as a rule, far more often than when the fetus is allowed to deliver spontaneously or with Kristellar expression, plus episiotomy, if indicated.[6]

The labor test must be quite rigidly applied in each case, otherwise unnecessary operations will be done. Illustrating this point is one of our prize cases:

A Negro girl, A. W., first came under our care, pregnant at term in her fifteenth year. Her pelvic inlet by the grid method of x-ray measured anteroposterior 9.25, lateral 10.25, outlet normal. The fetus was large and the head floated above the inlet. Our rule is that each patient deserves a full test of labor if the pelvic inlet is anteroposterior 9 cm. or more. She went into labor with most of the staff insisting on a cesarean operation, and at seventeen hours the head still floated. Nevertheless we decided to wait for twenty hours and we went to the dining room to have dinner before any operative procedure. While there we were hastily summoned and found that she had precipitated in bed. The infant breathed spontaneously and weighed 8 pounds 5 ounces (3,770 Gm.), and the head measured biparietal 9 cm. and suboccipitobregmatic 10 cm. Since then she has delivered four more children of the same size, the earlier of which were born with long first stages of

2. Woodbury, R. A.; Hamilton, W. F., and Torpin, Richard: Am. J. Physiol. **121**:640 (March) 1938.

3. McCord, J. R.: South. M. J. **28**: 53 (Jan.) 1935.
4. Hilles, D. S., and Benensohn, S. J.: Am. J. Obst. & Gynec. **36**: 427 (Sept.) 1938.
5. Kay, J. B.: J. M. A. Georgia, to be published.
6. D'Esopo, D. A., and Marchetti, A. A.: Am. J. Obst. & Gynec. **44**: 1 (July) 1942.

labor and short second stages. However, subsequent x-ray studies of the inlet revealed that it gradually became larger and now each of the diameters has increased 1 centimeter to anteroposterior 10.25 and lateral 11.25 cm.

During labor what is to be done for the fetus? Few textbooks have given the subject much consideration. Moreover, the fetus is subject to exhaustion quite parallel to that of the mother and often to some factors not affecting her. Both need plenty of fluid. Dextrose is the most easily assimilated food and is most valuable and often neglected. Oxygen administered to the mother is of prime use for the fetus, and, when there is evidence of actual or impending fetal exhaustion, oxygen should be administered constantly. The conditions which reduce the oxygenation of the maternal blood stream are convulsions or coma of eclampsia, pneumonia and other infections, anemia, cardiac decompensation, morphine and other drug depression. Besides these there are conditions in which the oxygen of the maternal blood stream may be adequate ordinarily, but the fetus has reduced ability to obtain or use it, such as premature separation of the placenta, placenta previa, cord entanglements, prolapse of the cord, some cases of velamentous insertion of the cord, and hypertonicity of the uterus, which sometimes may be so extreme as to be tetanic. In all these conditions oxygen may be life saving for the fetus, tiding it over until delivery. Nothing is more dramatic than the improvement in the depressed fetal heart rate by administration of oxygen to the mother. By administering it to all eclamptic patients in convulsions or coma, the fetal salvage rate may be greatly augmented.

Furthermore, the fetus is benefited by x-ray studies, which, if carried out as here outlined, are inexpensive enough to be done routinely in any office or clinic. Only by routine use can the best results be obtained. Using a positioning frame placed on the x-ray table, as devised at the University of Georgia School of Medicine, the grid film, as worked out by Thoms, is made in a few minutes by any technician. (At night medical students here do very well.) By use of the frame, 8 by 10 inch film may be used and patients in labor are as easily positioned as patients in earlier pregnancy. This film is made at eight months for all private patients. The reason for this is not only to determine the size of the pelvic inlet and some idea of the outlet, but also to be sure that the presentation is cephalic and that there is not anencephalus, a condition not infrequently diagnosed by this method. The knowledge that she has a large pelvis and normal presentation more than compensates for the cost to the mother. For clinic patients this is done not at eight months but when they enter the hospital in labor. X-ray films are made routinely only for primiparas, and for multiparas only if complications are developing. In addition, during labor of all primiparas and selected multiparas a lateral soft tissue 14 by 17 inch film is made, as described by Snow [7] and by Dippel and Brown.[8] This indisputably gives the presentation of the fetus, presence or absence of gross osseous malformations and degree of descent of the presenting part. By use of a simply devised centimeter marked lead ruler strapped longitudinally over the abdomen as close as possible to the fetal head, its biparietal or suboccipital bregmatic diameter may be measured to within 5 per cent error. Consequently from these quickly made and inexpensive studies most of the guesswork is eliminated and the obstetrician may accurately prognosticate complications in labor in all but the cases in which there is dystocia due to resistance of the soft parts and ineffectual uterine contractions. But knowing the exact size and shape of the inlet and the approximate outlet, the true presentation, the degree of flexion of the presenting part and the degree of descent of the presenting part, he is armed with far greater aids in managing the dystocias of other origin and, most valuable of all, he can outline the campaign of labor more intelligently. Consequently the management of labor becomes a science as well as an art. A further aid in the use of x-rays as described is that all reports are briefly stated in accurate terms. The roentgenologist does not have to present his opinions and thereby become an obstetrician. However, it is probably better if the obstetrician also reads the films of his own patients. A few time tried rules are applicable:

1. Test of labor is given to all parturients who have an inlet, anteroposterior diameter of 9 cm. or more, even if there is also present considerable narrowing.
2. If the anteroposterior is less than 9 cm. no one could be criticized for doing early cesarean section. However, most babies will deliver safely through a pelvis whose anteroposterior inlet is above 8 if it is accompanied as usual by a wide inlet, as is characteristic of platypelloid pelves. On the other hand it is astonishing how few women, colored or white, other than dwarfs, have anteroposterior inlets less than 9. (Probably one or two occur in a thousand.) Not infrequently fetuses deliver normally whose biparietal diameter is equal to the anteroposterior inlet diameter of the pelvis.
3. A narrow outlet as seen in the inlet grid film by noting the degree of inward protrusion of the ischial spines occasionally causes dystocia, especially if the occiput presents posteriorly. The spines hold the head and prevent its rotation. Half of the infants delivering direct occiput posterior had this as an etiologic factor. The other half were found to be associated with rapid labor through a justomajor pelvis with nothing to make them follow the usual mechanism of labor.
4. If the placenta is on the anterior wall of the uterus there is increased chance for the fetus to present with the occiput posterior.

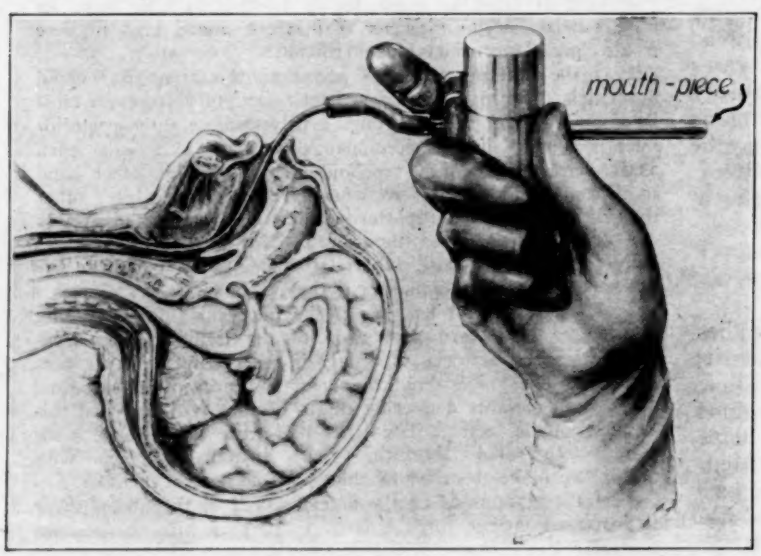
ANESTHESIA IN LABOR

In this day and age some sort of amnesia, analgesia or anesthesia in labor is necessary as well as prudent. Probably all the methods have on occasion some deleterious effect on the fetus, one of the older of the modern methods, twilight sleep (morphine and scopolamine) having gained a notorious reputation for its blue babies, and the youngest, continuous caudal analgesia, being associated with a high incidence of forceps deliveries. Very likely the method most universally used is that of amnesia produced by the shorter acting barbiturates and scopolamine. Properly administered, the latter has the advantages of being less depressing to the fetus than some of the others and of being quite easily administered and usually quite satisfactory from the mother's point of view. Infants are depressed in some cases, some being apparently more susceptible than others, and if inhalation anesthesia, as ether or cyclopropane, is used in the late second stage, the infant may be very depressed, as it is also in case of additional difficult operative delivery. Consequently with the use of barbiturates and scopolamine, it is well to use infiltration of 0.5 per cent procaine in the perineum if episiotomy is done or if forceps are used. Continuous caudal analgesia, like local infiltration of procaine, may be as little depressing to the fetus as no anesthesia at all. The latter long has been recognized as the best

7. Snow, W. J., and Rosensohn, Meyer: Am. J. Roentgenol. **42**: 709 (Nov.) 1939.
8. Dippel, A. L., and Brown, W. H.: Bull. Johns Hopkins Hosp. **66**: 90 (Feb.) 1940.

for the fetus. This fact has prevented many obstetricians from embracing any attempt at anesthesia other than a few "whiffs" of an inhalation anesthetic agent at the end of the second stage. Continuous caudal analgesia has the added disadvantage of requiring expert administration and constant skilled supervision, often for many hours. Otherwise infection and other complications may arise. Whether or not analgesia or amnesia has been induced, the obstetrician should be ready to maintain oxygenation of the fetal blood after birth until the respiratory depression is overcome.

Caudal analgesia may be ideal in case of bag insertion, to be followed by operative delivery, thus eliminating double anesthesia. Meconium stained amniotic fluid was present in a number of cases of our series under continuous caudal analgesia. The fetuses cried immediately at birth and hypoxia was not present. Potter and Adair [9] have shown that hypoxia was the factor in 40 per cent of fatalities in more than a thousand fetal deaths. Almost all recent writers on the subject



Sagittal section of infant's head showing French catheter in place in trachea and insufflator attached ready for use. (Reprinted by permission of the Southern Medical Journal.)

agree that inflation of the lungs by oxygen or air is the most valuable measure to be taken in reviving the depressed infant. This is readily accomplished by use of the simple pocket insufflator illustrated herewith, developed at the University Hospital.[10] This has a weighted valve which controls the pressure of air or oxygen to the lungs at 20 cm. of water pressure following latex catheter tracheal intubation under direct laryngoscopy. With the first insufflation of air blown into the lungs the fetal heart rate, which may have been 30 to 40 per minute, rises immediately to a rate double or triple. The color of the skin changes rapidly from bluish to pink, and in a few minutes to one hour or more of insufflation the infant breathes spontaneously, provided there is no fatal brain injury or severe diaphragmatic hernia, under which circumstances the infant may be kept alive only until insufflation ceases. We maintained one such alive with normal color and heart rate for eight hours. It may be that in the future some of these infants can be kept alive by insufflation until a proper surgical operation can repair the defect. We had one serious brain hemorrhage in which the neurosurgeon evacuated the collection of blood and the infant immediately recovered fully from paralysis and convulsions. Certainly in our hospital many depressed infants have been revived by this method of insufflation. The technic is easily learned on a stillborn fetus. With the judicious use of amnesia and analgesia, probably one in ten or fifteen newborn infants needs insufflation. Otherwise the deep cyanosis which develops is almost certain to be accompanied by cortical cell damage due to hypoxia, which may alter the whole future course of the individual's life, as has been suggested by Schreiber,[11] Yant [12] and Courville.[13]

THE FETUS IN SPECIAL OBSTETRIC COMPLICATIONS

In prolonged labor, while the welfare of the mother is supreme, that of the infant should not be neglected. By x-ray studies as outlined, prolonged labor may be anticipated in certain pelvic deformities as shortened inlet, anteroposterior diameter or narrow outlet, or by malpresentation, such as transverse, prolapsed arm or hand, breech or occiput posterior presentations, the last two being only relatively abnormal.

Aside from these there are a group of patients, usually short, tending to be obese, often with masculine characteristics well described by Horner [14] and others as dystrophia dystocia syndrome, previously named dystocia adiposogenitalis. Often these have contracted pelves, but in a rather surprisingly large percentage the pelvis is normal in contour and size. In other words, many are dystocias of uterine origin—some are labeled cervical dystocias. The management of these is conservative if no disproportion can be made out by x-ray examination. A test of labor given with proper sedation and support by sugar, water, niacin and thiamine and oxygen discloses at the end of twenty to twenty-four hours whether the fetus is able to deliver by the vagina; if not, cesarean section, low type or extraperitoneal, is indicated. Usually at the end of the test one is quite able to determine the future progress of the labor, the head being in midpelvis and the cervix dilated or dilatable by bag. It is to be noted that when vaginal examinations have been done early in such labors there is a definite tendency for infection of the amniotic fluid and development of foul odor, in which event the incident of fetal death is increased.

Therapeutic measures in long labors are in general conservative: maintenance of hydration, nourishment in the form of dextrose and vitamins and extra supply of oxygen whenever there is a tendency to cyanosis of the mother or irregularity of the fetal heart beat. We believe vaginal instillation of a watery solution of antiseptic tends thus to prevent the increased fetal mortality in prolonged labor due to infection. Special features should include knowledge of size and contour

9. Potter, E. L., and Adair, F. L.: Am. J. Obst. & Gynec. **45**: 1054, 1943.
10. Volpitto, Perry P., and Torpin, Richard: South. M. J. **35**: 559 (June) 1942.
11. Schreiber, Frederic: Apnea of Newborn and Associated Cerebral Injury, J. A. M. A. **111**: 1263 (Oct. 1) 1938.
12. Yant, W. P.; Chornyak, John; Schrenk, H. H.; Patty, F. A., and Sayers, R. R.: Studies in Asphyxia, Public Health Bulletin 211, United States Treasury Department, Public Health Service, 1934.
13. Courville, C. B.: Untoward Effects of Nitrous Oxide Anesthesia with Particular Reference to Residual Neurologic and Psychiatric Manifestations, Mountain View, Calif., Pacific Press Publishing Association, 1939.
14. Horner, D. A.: Surg., Gynec. & Obst. **44**: 194 (Feb.) 1927.

of pelvis, size and presentation of the fetus. These measures, with proper sedation, are often prophylactic in preventing the tetanic contractions and especially the elevated tone between contractions. When high uterine tone prevails between labor contractions, the fetus is in danger because the normal heartlike action of the uterus in bringing maternal arterial blood to the placental area during the resting period and then squeezing it out through the veins during the contraction is abolished and the fetus then has access only to maternal blood depleted of oxygen. The measures cited, water, sugar and oxygen, plus more sedation for the mother, are the best preventive, and the prevention is much easier than the cure. In our studies the only drug effective in lowering the elevated uterine tone was morphine. Consequently, when the uterine contractions are of short duration, irregular in recurrence and accompanied with high uterine tone, morphine in a good dose (¼ grain, or 0.016 Gm.) is most effective. Often the patient sleeps, it may be through the night, following which, refreshed, she goes into a more normal labor which progresses to spontaneous delivery or to full dilatation and with the presenting part low enough to deliver safely instrumentally.

In other instances, while the patient sleeps labor continues much more normally and the fetus is delivered in a few hours. In these cases special care must be taken to insufflate early if the fetus is depressed. If, as is too often done, the obstetrician attempts to stimulate the uterine contractions, disaster is invited. For the most effective way to throw a normal laboring uterus into tetany is by administration of oxytocics, pituitary injection and ergot preparations, and when these drugs are repeated the intrauterine contraction tone rises gradually with more oxytocic drugs until complete tetany, when 30 to 40 mg. of pressure is constant. All these have been demonstrated in the work of Woodbury and his co-workers [2] in our clinic.

In some cases of prolonged labor, progress seems to come to a standstill. In those cases, if the pelvis is adequate in size, vaginal delivery is still the best procedure, but only after complete dilatation of the cervix with the head at least in midpelvis. If no progress or increasing dilatation of the cervix is observed over a period of several hours, our studies showed that almost any cervix could be dilated without injury by a large Voorhees bag placed inside, displacing the presenting part above, and for that reason we have given up the use of Dührssen's incisions. A weight of 7 to 9 pounds may be attached to the bag and allowed to exert full weight only for forty seconds, followed by a resting period of two minutes simulating normal labor. This intermittent force certainly is more like nature's way and, in the few cases used, dilated the cervix without necrosis within a reasonable time, and a saving of several hours in this condition is practical. When the cervix is fully dilated, the head can be pressed into the midpelvis and readily and usually safely delivered by Kielland forceps. Douglas and Stander [15] have recently shown that in prolonged labor the best results for the fetus follow spontaneous delivery.

ECLAMPSIA

As the immediate cause of eclampsia is not known, it is necessary to treat the condition symptomatically, and here, especially, good therapy to the mother is life saving to the fetus. Eclampsia is usually an acute manifestation of more or less protracted toxemia and, while more common in young women, is more fatal to the older ones. The actual mode of death is most frequently asphyxia secondary to repeated convulsions. Next most often probably is pneumonia from aspiration of stomach contents taking place during a convulsion or while she is in coma. A few die from brain hemorrhage, which may occur during a convulsion. Some die from acute heart failure and a few from anuria. Others die in a condition similar to surgical shock, and it seems that this is more likely in the dehydrated patients.

The fetus usually, but not always by any means, successfully survives these violent attacks, and much more often if the mother's oxygen intake is augmented during convulsions and coma. If it survives, it seems not to be damaged by the experience. From this analysis it is evident that much can be done for these patients. Our five point treatment,[16] developed in the management of 100 eclamptic patients, attempts to combat all possible causes of maternal and fetal death occurring during the attack or immediately thereafter; for, once the attack is weathered, the outlook brightens perceptibly:

1. Convulsions must be stopped. If they are severe, a sterile solution of phenobarbital sodium is given intravenously until controlled. Magnesium sulfate is used in addition for its possible effect in reducing the blood pressure, a gram an hour so long as the systolic pressure is above 160. Other barbiturates or paraldehyde may be used if necessary for sedation, but we do not use morphine because of its effect in increasing intracranial pressure and failure to control convulsions adequately.

2. Adequate salt free diet when the patient is not in coma.

3. Adequate fluid intake: 3,500 cc. of 5 per cent dextrose in sterile distilled water intravenously daily when the patient is in coma. Blood transfusions are indicated if anemia is present. Additional oxygen by oropharyngeal flow of 5 to 6 liters per minute is given constantly in severe cases. Both of these aid in carrying further oxygen to the fetus.

4. Absolute rest with elevation of the foot of the bed for lung drainage if the patient is in coma. For further prevention, constant suction aspiration with duodenal nasal tube may be employed.

5. Forestall recurrence of eclampsia by termination of pregnancy after recovery from the attack or when the condition becomes stationary by induction of labor, preferably by rupture of the membranes.

THIRD TRIMESTER HEMORRHAGE

Placenta previa and premature separation of the normally implanted placenta are serious complications of late pregnancy. By their very nature they are often associated with prematurity and, since the life of the mother is in ominous danger, hers should be saved at all costs. This does not excuse neglect of the fetus, which is fortunately benefited by good care to the mother. Such consists, in general, of measures to stop hemorrhage, to replace by transfusion her blood lost and to increase the concentration of oxygen. Hemorrhage is usually quite effectively controlled by rupture of the membranes and tight binding of the abdomen. We have given up cesarean section for almost all these cases except placenta previa centralis, which is very rare, only one having occurred in this series. By the routine immediate treatment of these cases all mothers should be saved and a much larger proportion of the infants than have been rescued in the past. Hospitals must become blood conscious and have available the various types for immediate use. Of course, the fetus,

15. Douglas, R. G., and Stander, H. J.: Am. J. Obst. & Gynec. **46**: 1 (June) 1943.

16. Torpin, Richard, and Coppedge, W. W.: South. M. J. **33**: 673 (July) 1940.

being premature as a rule, must have all the safeguards of that condition also, and, like other prematures, it stands vaginal delivery probably better than cesarean.

BREECH PRESENTATIONS AND MALPRESENTATIONS

As breech presentation carries a fetal mortality of at least 7 per cent (three and a half times that of cephalic presentation) in those cases in which the fetus weighs 5 pounds (2.3 Kg.) and a much higher mortality in prematures, every effort should be made to turn the fetus to cephalic presentation at the seventh or eighth month. Prophylactic external version is being accepted more and more as a sound procedure, and every physician doing obstetrics should be familiar with the technic, which has been well described in many papers of national distribution.[17]

When necessary to deliver a fetus by breech, x-ray examination of the inlet and of the fetus is invaluable, and in order to avoid damage as described it is wise to let the uterine and abdominal contractions furnish the force, and two hours of the second stage is not too long. The fetal heart tone should be recorded frequently. If the patient is unable to expel the fetus it is better to have some one push on the fundus through the abdominal wall than to pull on the fetus. If the arms are up, as is rarely the case, the shoulders should be rotated one at a time to the hollow of the sacrum and the arms delivered there. Episiotomy and forceps to the aftercoming head are highly recommended, and forceps should be used if the head does not deliver easily. Insufflation instruments should be at hand to oxygenate the baby's blood until it breathes spontaneously.

TRANSVERSE PRESENTATION

This malpresentation should be treated by prophylactic external version if seen prior to or early in labor. If first seen in labor, x-ray studies, inlet grid and soft tissue lateral films are most helpful, since most cases occur in the flaccid uterus of multiparas, often with twins. As a rule, vaginal delivery is best. If seen first in labor with full dilatation of the cervix and with adequate sized pelvis, internal version and extraction have been productive of no maternal mortality in a series of 24 cases, but the fetal mortality was 40 per cent.[18] If seen in labor with undilated cervix and an adequate sized pelvis, a large Voorhees bag is inserted and intermittent weight applied. When the bag comes out, internal version and extraction are to be done if the fetus is alive. If the pelvic cavity is too small and the fetus is still alive, extraperitoneal section may be undertaken. If the fetus is dead, as is usual in neglected cases (in labor twenty-four hours or more), amputation of the head followed by delivery of the body by pulling on the prolapsed arm and then delivery of the head by fundal pressure with one hand and traction on the fetal jaw by the other are indicated.

GIANT FETUSES AND PREGNANCY PAST TERM

Obstetricians may fear past term pregnancies and the development of a giant fetus. For practical purposes this is extremely rare; in this series there was only one infant weighing more than 12 pounds (5.4 Kg.) at birth. The exceptional fetus weighed 14 pounds 7 ounces (6.55 Kg.) and was not able to be born vaginally. It was delivered by low cervical section and survived. How is the obstetrician to manage the pregnant patient who is apparently overdue? This is of great practical importance and probably accounts for many fetal deaths per year and not a few maternal mortalities from attempts to induce labor or from unnecessary cesarean operations. We have followed the rule that the patient should be allowed to go into labor spontaneously, at which time she is managed carefully by x-rays, fluids and sedation and a test of labor. Then there is no contraindication to cesarean section if one is necessary, which is extremely rare. Patients are instructed that labor may be normal and still be four weeks early or the same amount of time late. Furthermore, they are acquainted with the rule not to interfere, and these facts release any psychologic factor in the mind of the patient or physician. Once the obstetrician induces labor in one patient he is confronted with all her friends in like circumstances, for whom he finds arguments against a similar procedure difficult. Not that induced labor in itself is very dangerous; still, all in all, it is more so than spontaneous and should be reserved for definite indications. This attitude of nonintervention is dangerous only if the fetus is extrauterine. The best time to determine this easily is in early pregnancy, from eight weeks to midterm, when every effort should be made by vaginal examination to determine the intrauterine presence of the fetus. The patients often have abdominal pains and quite often bleed or spot vaginally at times in pregnancy.

OTHER INJURIES

Most injuries to the fetus during labor are avoidable, especially breaking of arms and legs or overstretching of muscles and nerves of the neck. The obstetrician's responsibility, being practically double that of other types of medical or surgical care, should warrant the most careful appraisal of all factors in the mechanical procedure of difficult operative delivery. Consequently, none should be undertaken except after a careful x-ray study as outlined and, unless by an expert, this followed by manipulation of a fetal manikin placed in the identical position in relation to a model of a pelvis.[19] From pictures in an anatomic atlas any local octogenarian who likes to whittle will readily make models of the three pelvic bones which may be assembled and attached to a solid base. A doll better than most in use can be made from cotton, covered with chamois skin, in the head of which are assembled the skull bones from a stillborn fetus.

By this method the operation of version and extraction is tremendously facilitated and even forceps operation is made much clearer. In regard to forceps operation, which is no doubt the commonest of all, most physicians feel quite competent. And yet many fetuses are temporarily and some permanently injured. Besides there is a rather high fetal mortality. The fetal mortality and morbidity are lowest if the indications and conditions are rigidly observed, including at least two hours of second stage labor. Observation of this will reduce the number of operations because many parturients will deliver spontaneously in the interim. The mastery of the forceps by manikin delivery of a fetal doll repeated daily for many days at a time, being sure to apply the blades exactly to the sides of the head in each case, can improve any one's technic. If given time and care enough, most will deliver spontaneously. The ideal forceps rate is low—

17. Bartholomew, R. A.: Am. J. Obst. & Gynec. **14**: 648 (Nov.) 1927.
18. Torpin, Richard: Am. J. Obst. & Gynec. **39**: 92 (Jan.) 1940.
19. Satisfactory models for the individual physician can be fabricated by home talent.

probably not over 2.5 or 3 per cent. In our hands the use of the Kielland forceps has been the easiest to teach, as this single type may be used in any case of low or mid forceps, and may be easily inserted so that the blades lie directly over the sides of the head. When rigid indications are followed a rather large percentage will be occiput posterior presenting heads which have become stationary in mid pelvis at occiput transverse. The Kielland forceps was developed with its bayonet blade for insertion underneath the symphysis pubis and the bladder for rotation onto the fetal head, so that its application is almost as simple as when the head lies on the perineum with its occiput anterior. I am of the opinion that Kielland forceps used properly, and this is easily learned on a manikin, is far less injurious to the fetus than any other type. In these 6,000 deliveries, there were 150 rather difficult forceps deliveries. Most of these were occiput transverse in midpelvis, and no fetus bore an external mark which showed the next day.

TECHNIC OF ACTUAL DELIVERY FOR PROTECTION OF THE FETUS

It goes without saying that the fetus should receive attention to the extent of recording the fetal heart rate during labor and delivery. How often depends somewhat on the attendants, but at least every half hour and especially so in the second stage. Variation in rate from time to time and especially slowing is indicative of hypoxia, and the treatment above all for this is, as a rule, oxygen to the mother and not rapid and often mutilating delivery.

The attendant frequently can diagnose early in labor the fact as to the cord, whether it is caught or free. He can do this by listening to the heart tones during a uterine contraction or between contractions but with firm pressure on the fundus. In either case, if there is no alteration in the fetal heart rate the cord is presumed to be free. If the rate slows and does not recover rapidly, the cord may be impinged on, and oxygen is indicated. Bourland [20] has recommended the Trendelenburg position for occult prolapse of the cord. Ideally the fetal heart rate should be observed constantly at actual delivery. This is readily accomplished by the anesthetist using a weighted fetal heart stethoscope as devised by Leff.[21]

At delivery of the head the cord, if wrapped round the neck, is loosened gently and slipped over the shoulders. Rarely is it necessary to cut it between clamps. It is imperative that the fetal head at all times be held low at delivery. Otherwise at the first inspiration mucous and vaginal secretions may be aspirated, which, in premature infants especially, may result in pneumonia a few days later. Even before the body is born it is wise also to suck out the secretions from the pharynx by aid of a rubber ear and ulcer syringe.

The delivery of the shoulders, which not infrequently causes delay, should be done by turning the body so that each shoulder in turn may be delivered in the hollow of the sacrum, as recently advocated by Woods.[22] According to his technic, this cannot be done without synchronized pressure on the fundus and until the posterior shoulder has passed the ischial spines. Pulling the head is dangerous to the muscles of the neck and nerves of the brachial plexus. Rudolph [23] has described a technic by spiral movement and he states that the shoulders should pass through the upper half of the pelvic cavity in an oblique manner. In the delivery of the series here reported we have used fundal expression without much traction on the neck, and the pediatricians report that they have seen no injuries of the arm or shoulder in any of the cases.

20. Bourland, J. W.: Am. J. Obst. & Gynec. **31**: 1043 (June) 1936.
21. Leff, M.: Am. J. Obst. & Gynec. **26**: 108 (July) 1930.
22. Woods, C. E.: Am. J. Obst. & Gynec. **45**: 796, 1943.
23. Rudolph, Louis: Illinois M. J. **69**: 243 (March) 1936.

CARE OF THE PREMATURE FETUS

In regard to the premature fetus the confusion of the past is gradually giving way to the appreciation of the fact that premature infants are potentially quite as able to make good citizens as are full term infants. The studies of Hess,[24] Bundeson,[25] Studdiford,[26] Diddle and Plass [27] and many health departments, in addition to the truly marvelous work of Alan Dafoe in the management of the early lives of the Dionne quintuplets, have done much to educate not only the profession but the public as well in the appreciation of premature care.

Some things that have held back progress are:

1. Slowness of the general practitioner in realizing that the problem demands the utmost expert care.
2. Responsibility in the larger hospitals divided between obstetricians and pediatricians and, further, their failure often to require consultation of neurosurgeons.
3. The lack of interest taken by pathologists, as the cause of death frequently leaves few evidences to the examiner's eyes.
4. Scarcity of nurses well trained in this extremely specialized branch.

For the sake of argument, physicians should take the view that any infant weighing 2½ pounds (1,134 Gm.) at birth should survive, and if it doesn't they should hold themselves responsible to ascertain exactly why it died and how to prevent repetition of the outcome in later cases. Occasionally one weighing 1½ pounds (680 Gm.) at birth will live, but the mortality of those under 1,200 grams is 60 per cent, or more, according to Plass and Hess.

Of paramout importance is the part of the obstetrician in conduction of the delivery and the initiation of respiration with elimination of as many injurious facts as possible.

A few factors generally applicable to the delivery are as follows:

1. Induction of labor should be eliminated except for valid indications.
2. Prophylactic external version should be done if the head is not presenting.
3. What helps the mother is usually aid to the fetus; in three words, water, sugar and oxygen.
4. Sedation of labor takes preference over stimulation.
5. When the cervix has been fully dilated two hours, delivery is quite safe if done by deep episiotomy and either Kristellar expression or low forceps.
6. Conduct of delivery by cesarean section is not the answer to reduction of mortality of the premature fetus.
7. Vitamin K should be given.

During actual delivery there are several vital factors necessary to a successful outcome. First the forces acting on the fetal head are probably less dangerous if delivery is spontaneous than by forceps. If the uterine contractions in the second stage are too violent and too frequent with high uterine tone, there has been shown to be increased rate of brain injury to the fetus. This type of uterine contraction must be controlled by

24. Hess, Julius: The Premature Infant, Philadelphia, J. B. Lippincott Company, 1941.
25. Bundesen, H. N.: Everybody's Health **35**: 215 (Dec.) 1935.
26. Studdiford, W. E., and Salter, H. P.: Am. J. Obst. & Gynec. **35**: 215 (Feb.) 1938.
27. Diddle, A. W., and Plass, E. D.: Am. J. Obst. & Gynec. **44**: 279 (Aug.) 1942.

a general anesthetic, nitrous oxide or cyclopropane probably rating above ether or chloroform. If forceps are used their blades should be exactly over the sides of the head, and not too much pressure should be applied. The traction should simulate labor, forty second pulls relieved by one and one half to two minutes relaxation. The direction of traction is very important and easily learned on a doll through a pelvic manikin. The traction which is directed posteriorly at first follows a sharp curve upward as the head emerges. The pharynx must be cleansed of infected vaginal secretions, preferably by keeping the head low and by suction readily done by a rubber ear syringe. The infant must be kept warm and not traumatized and allowed to obtain all possible blood from the placenta. If the cry is not immediate, intratracheal insufflation is life saving if done with controlled pressure. All other methods are less effective and often injurious by trauma or infection, either of which is poorly withstood by the premature. Many premature infants survive for a few days only to succumb to a suddenly developing lung infection implanted by aspiration of vaginal secretions at its first inspiration. A full term well developed infant probably can eliminate aspirated material, but premature infants are often too weak to cough, and infection is often rapid and fatal and of such suddenness as to be mistaken for a fatal brain hemorrhage or congenital heart disease.

The umbilical cord ought to be ligated after pulsation ceases, during which time the mother should inhale oxygen so that some of it may enter the baby's blood through the cord. The baby, in addition, must not be allowed to get cold, and this is a prime duty of the obstetrician at the time of birth. The position of the infant should be head low in order to prevent aspiration. Oxygen is of value, but it cannot replace the careful prevention of aspiration of infected material. It goes without saying that gentleness is the keystone of success.

DIABETES MELLITUS

In the past ten or fifteen years, tremendous advance has been made in the care of pregnancy in women with diabetes mellitus, heart disease or tuberculosis, and most of this has been accomplished in special clinics for the pregnant women afflicted with one of these diseases, where the care is divided between the diabetes, heart or tuberculosis specialist in association with the obstetrician. Today the pregnancy is viewed as a complication of the disease instead of vice versa. In this manner not only the welfare of the mother has been enhanced but also that of the fetus, and no obstetric clinic should exist without having its diabetic, cardiac or tuberculosis patients cared for in a similar way.

The fetal death rate of this condition is high to such an extent that before the insulin era few live infants were born at term. The cause of death has not been entirely determined. Aside from a tendency to abortions, many fetuses die in utero near term; others have a tendency to development of excess weight while the skeletal structure and parenchymatous organs are underdeveloped. Some think this is due not to increased maternal blood sugar but to a pituitary factor. At any rate this complicates assurance of a live fetus. If it is allowed to remain in the uterus too long it may die, and, if delivered too early, it may succumb to the hazards of prematurity, even though its weight is above that of an average full term fetus.

White, Titus and Sisson [28] in Joslin's clinic, in collaboration with the Smiths, believe that the fetal mortality has to do with added toxemic factors in the diabetic mother and they believe that this, in turn, is due to hormone imbalance, essentially an increase in the gonadotropic content of the blood, which results in lowering of the production or utilization of estrogen and progesterone. They advise substitution therapy by replacement of estrogen and progesterone in large doses. They advise the following labor therapy: vaginal delivery of those who show no toxemia or who have it controlled by substitution therapy, and cesarean section for those who develop toxemia.

Because of the tendency to development of large fetuses in diabetic women, extra studies by x-rays should be made, although the overgrowth is often not in the fetal skeleton. If the fundus measures 30 cm. above the symphysis pubis after eight months, there being no obvious hydramnios, it may be well to induce labor if the pelvis is adequate or perform cesarean section if it is contracted and the fetus is considered large. As soon as the infant is born it may develop hypoglycemia and should receive extra dextrose solution by mouth or otherwise. All infants with diabetic mothers should be treated as though they were premature.

PREGNANCY AND HEART DISEASE

In a study of 850 cardiac patients in pregnancy at the Boston Lying-in Hospital, Hamilton [29] and his co-workers have demonstrated the curve of the "load of pregnancy" and have shown that this begins to rise at the onset of the sixth calendar month and reaches its peak at the eighth month, declining from then on to full term. They divide pregnant cardiac patients into favorable and unfavorable. The favorable ones have enlargement of the heart and a murmur, while the unfavorable have, in addition, (1) evidence of or history of congestive heart failure, (2) presence of a dangerous disorder of the heart beat or (3) complicating serious disease.

If the patient belongs in the unfavorable group, she is advised to have her pregnancy terminated during the first five months. If seen later, she is carried to full term, when the load is less than during the sixth, seventh or eighth months. This not only lessens the mortality for the mother but saves many babies. Teel [30] and others have shown that premature infants of mothers with heart disease do poorly but that full term fetuses survive about as well as those born to healthy mothers. Students of pregnancy in heart disease agree that labor at the time of congestive heart failure is highly fatal and much of the improvement in care has been in preventing failure throughout pregnancy. During labor the fetus demands more consideration than it has received and, because of possible increased hypoxia, insufflation methods should be at hand to oxygenate the fetus until it breathes spontaneously. Continuous caudal analgesia should be the anesthesia of choice in these cases.

TUBERCULOSIS AND PREGNANCY

The tone of the papers on tuberculosis and pregnancy of ten years ago was much more pessimistic than those of today. The fetus has an improved chance because pregnancy is not so often terminated. Collapse therapy

28. White Priscilla; Titus, R. S.; Joslin, P., and Hunt, Hazel: Am. J. M. Sc. **198**: 482 (Oct.) 1939.
29. Hamilton, Burton E.: The Heart in Pregnancy and the Childbearing Age, Boston, Little, Brown & Company, 1941.
30. Teel, Harold M.: Am. J. Obst. & Gynec. **30**: 53 (July) 1935.

has benefited the pregnant patient as it has others. X-ray chest examinations at the beginning of pregnancy to diagnose tuberculosis early may some day rank with the Wassermann and Kahn tests for the early detection of syphilis. Pulmonary tuberculosis probably has little effect on labor, which should be conducted with minimum strain to the mother and with all safeguards for the fetus.

IMMEDIATE CARE OF THE NEWBORN IN RELATION TO NEONATAL MORTALITY

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The success or failure of the immediate care of newborn babies in its relation to neonatal mortality poses a problem for both obstetricians and pediatricians. Neither specialty has too much of which to boast, for the continued high mortality during the first twenty-four hours after birth clearly indicates that the medical care given infants at that time is inadequate. In most cases this is due to factors existing before birth and, as a consequence, postnatal care no matter how adequate fails. There should be two objectives always in mind when dealing with the pregnant woman and later with her newborn child, namely (1) the elimination of possible difficulties developing during pregnancy, labor and delivery and (2) the prevention of emergencies arising in the postnatal period. Any apparent success that has been achieved in improving the survival rate by immediate treatment is in direct proportion to the extent that that care has been entrusted to the pediatrician. Further progress will depend on the intelligence, cooperation and zeal exhibited by both in approaching and participating in the solution of mutual problems.

In the effort to reduce neonatal mortality, the immediate care of newborn babies should concern itself particularly with those conditions causing the highest mortality such as (1) asphyxia, (2) infection, (3) hemorrhage, (4) feeding and (5) prematurity. It is recognized that all of these are somewhat interrelated with no sharp line of demarcation discernible and that, while at present these problems seem insurmountable, much is being accomplished by more efficient and complete antepartum care, skilful management of labor and delivery and more exact knowledge of the conditions dangerous to the infant in the early postnatal period.

ASPHYXIA

Little can be done to overcome severe asphyxia neonatorum apart from preventing the circumstances preceding birth which precipitate it. The causes and mechanism of its development are more clearly understood, but until the time when we can eliminate prematurity, complications of labor and delivery such as premature placental separation, placenta previa, cord dislocations, toxemia and defects or injury to the central nervous system we shall continue to acknowledge asphyxia as a most important factor in neonatal mortality. The increasing use of deep analgesia and anesthesia for delivery of infants has been accompanied by a corresponding increase in the incidence of death from asphyxia. Perhaps it is the main reason why no decrease in the mortality of the first twenty-four hours has been achieved. One cannot expect a newborn infant to breathe spontaneously when its own blood is full of the anesthetic or analgesic administered to the mother and a relative state of anoxemia exists. The carbon dioxide content of the infant's blood may be high enough, but it fails to govern respirations in a normal physiologic way because of the presence of the hypnotic drug. This is particularly true in those cases in which some emergency complication of labor or delivery has occurred necessitating prompt surgical intervention and relatively deep anesthesia. When an analgesic has also been used prior to the emergency, added danger looms and the loss of blood, length of time consumed before delivery, prolonged anoxemia and shock in these cases account for a high mortality. The fact that most of the babies are premature makes the problem almost insurmountable from the standpoint of resuscitation and survival.

One of the early signs of fetal distress is a pronounced slowing of the fetal heart rate and convulsive activity of the baby during labor and should be recognized as an indication of anoxemia. If the heart rate should be increased beyond normal, subsequent severe asphyxia may be anticipated. Under such circumstances, inhalations of oxygen by the mother during the last several minutes of delivery and as long afterward as the cord pulsates will permit more oxygen and blood to reach the fetal circulation. Gentleness of manipulation and maintenance of body heat are two general principles of paramount importance in any resuscitation procedure followed from here on. It is recognized that a certain amount of shock is present in most newborn infants and, unless it is severe, these methods are all that is needed to help reestablish respirations.

After birth and even before the cord is severed, toilet of the mouth and pharynx should be instituted. Removal of anything which might obstruct fetal respirations, such as blood, mucus, amniotic fluid and débris, may be accomplished by postural drainage or aspiration. However, asphyxia associated with trauma of cerebral structures with gross hemorrhage and depression of the respiratory center will not respond to clearing of the air passageways alone. It is well to remember that permanent damage to the central nervous system, bringing about degenerative changes in nerve cells, may result from anoxemia associated with petechial hemorrhages and blood stasis; such damage is not reparable. Resuscitating machines are necessary to start and help maintain respirations during this emergency. Drugs such as nikethamide or alpha lobeline should be given but are often disappointing in their results as the effects are so often fleeting in character. Artificial respirations by some form of resuscitating apparatus should always be used although mouth to mouth insufflation is acceptable, but control of pressure is better secured by mechanical means. Of course, administration of oxygen should be continuous until spontaneous respirations occur and the color improves, at which time carbon dioxide in 6 to 10 per cent volume may be added to the oxygen at intervals. Tracheal catheterization may be necessary in severe cases of asphyxia, but this is a difficult procedure, especially since many

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babies showing asphyxia at birth are premature and structures are small and delicate.

An outline of the immediate treatment of asphyxia neonatorum includes (1) gentleness in handling, (2) warmth, (3) aspiration of mucus, (4) oxygen inhalations, (5) artificial respirations by mechanical devices, (6) carbon dioxide at intervals and (7) drugs which stimulate the respiratory center. Ultimate success will be achieved by preventive rather than by immediate postnatal treatment.

INFECTION

Accurate statistics on infection as a cause of neonatal mortality are difficult to secure. Much depends on whether an autopsy has been obtained and if microscopic and cultural studies were made at the same time. Our neonatal mortality survey in Philadelphia over several years showed that the mortality from infection was over 15 per cent when autopsies were performed but less than half that when not done. Types of infection usually found in the newborn vary and not all of them are fatal. Serious consideration must be given to each kind, however, for a seemingly minor disturbance may easily become a major disaster at any time. Pneumonia, sepsis, peritonitis and meningitis are generally fatal. Miliaria, impetigo, pyelonephritis, erysipelas, diarrhea and local skin abscesses can usually be controlled if appropriate measures are taken promptly.

Of all the organisms to which a newborn infant may be exposed, two stand out prominently, namely Staphylococcus aureus hemolyticus and Escherichia coli. These two organisms alone or in combination caused the largest percentage of pneumonia deaths in the Philadelphia survey referred to previously. It is rare to find either one causing pneumonia in later infancy or childhood, but it appears that the newborn infant has very little resistance to them whereas little susceptibility is apparent in the newborn to the ordinary catarrhal bacteria unless received in overwhelming doses at frequent intervals. The frequency and severity of staphylococcic infections in early infancy depends in large measure on whether they are saprophytic or pathogenic organisms and whether the antitoxin titer of the infant's blood is at an average level. It would appear as though some babies have a rapid fall in their antitoxic levels soon after birth and easily become a prey to the invading organisms. The almost universal presence of staphylococci on the skin, in the nose and throat and in the gastrointestinal tract may have some influence in gradually building up some resistance.

The prime objective of treatment of any infection of the newborn infant is in its prevention. This idea is so well recognized that ideal newborn nursery aseptic and antiseptic technics have been developed in many institutions where space and assistance are available. The one main criticism of these technics is that they are too extensive as a rule and also, one might say, exhausting to execute. The more exacting these regulations, the greater the opportunity for mistakes to occur. In summing up without going into too much detail, the generally accepted standard technics include (1) an intelligent, conscientious and permanent nursing staff with *esprit de corps,* (2) personal cleanliness of all nursery workers, particular attention being paid to the hair, hands, skin generally and clothing, (3) individual aseptic utensils for each child, thermometer, clothing and the like, (4) frequent washing of attendants' hands, especially after removing soiled diapers, (5) exclusion of infectious individuals (local skin infections, upper respiratory infections and so on) from the nursery, (6) sterile milk room technic with use of sterile milk for all feedings, (7) competent feeding technics, gavage feedings only by trained nurses, (8) limiting persons allowed in the nursery to those with actual duties to perform and (9) avoidance of oil drops in the nose.

PNEUMONIA

In the Philadelphia study, pneumonia was responsible for 5 per cent of the total mortality without regard to whether or not autopsies were performed. Aspiration of foreign substances by the infant is probably the greatest factor in causing pneumonia, and it may result from insufflation of amniotic débris, vaginal secretion, milk directly or after regurgitation, nasal oil drops, by inhalations of bacteria laden air and as a terminal condition of sepsis. Massive pulmonary hemorrhages may arrest or impair circulation locally, thus furnishing a nidus for bacterial invasion later. Such hemorrhages may be a part of hemorrhagic disease, of asphyxia or of careless overexpansion of the lungs during resuscitation procedures. Pneumonia that follows atelectasis is perhaps in the same category as insufflation types. Treatment of pneumonia must be on the same basis as at any age. Aspiration of pharyngeal secretions and constant oxygen inhalation are prime necessities. The sulfonamide drugs have a definite place but have not proved of value in lipoid types. The mortality is high, especially among the premature.

SEPSIS

Sepsis among newborn babies is probably more frequent than suspected. Many babies dying of pneumonia are perhaps in the terminal phase of septicemia and are classified as the former rather than the latter. Organisms gain entrance to the blood stream through abrasions of the skin, through the cord stump, through infected breasts, through gastrointestinal, pulmonary and genitourinary tracts and because of careless technics in intravenous and subcutaneous injections. The port of entry is not always found. In my own experience Staphylococcus aureus is the most frequent organism found, followed in importance by the colon bacillus, hemolytic streptococcus and Streptococcus viridans. Treatment is again one of prevention. Active therapy is not too successful unless localization occurs in some area that permits of drainage, such as the bone or kidneys. Transfusions of blood, plasma, dextrose, infusion of saline solution, sulfonamide compounds, careful feeding and treatment of local infection, if it occurs, are all of great value. Penicillin may prove invaluable.

SKIN INFECTIONS

Pyoderma is the most common form of skin infection seen in the newborn. Two forms are easily recognized: miliaria or heat rash, in which Staphylococcus albus is cultured from the pustules, and impetigo, characterized by cultures of Staphylococcus aureus. The skin of the newborn furnishes a vulnerable and fertile soil for the staphylococcus. Numerous attempts have been made to prevent pyodermic infections of the skin by alterations of bathing technic, antiseptic oils and ointments, but, regardless of procedure, lesions do appear and flourish. Overheating, brusque handling and rough clothing all tend to irritate the skin, thereby

opening minute ports of entry for the ubiquitous staphylococcus. The central point in the active treatment of pyoderma is to keep the area affected as dry as possible. Blebs and pustules should be opened, the contents wiped off with alcohol and a 5 per cent lotion of sulfathiazole applied freely. Exposure to ultraviolet radiation at a close distance is helpful.

DIARRHEA

Judging from reports now published in medical literature, diarrhea is more prevalent in epidemic form than formerly acknowledged unless previous epidemics have not been reported. It is hard to decide whether the condition is a disease entity in itself or a part of a symptom complex. In three such epidemics I myself have known, three different organisms were cultured from both the stools and the blood stream—Streptococcus hemolyticus, Pseudomonas aeruginosa (Bacillus pyocyaneus) and Escherichia coli. In one the streptococcus was cultured from the formulas, in another a pure culture of colon bacilli was obtained from gauze and cotton on the work table; the source of contamination by the pyocyaneus was never discovered. Undoubtedly, overfeeding with artificial food in the first few days of life is a contributory factor; indigestion may soon lead to severe diarrhea. Treatment of the condition is far from satisfactory and the mortality is high, while recurrences are common. Isolation of the infected babies, separation of the new infants, thorough cleaning and painting of the contaminated nursery and investigation of the nursing personnel regarding aseptic and antiseptic nursery technic are advisable procedures. Blood or plasma transfusions, adequate fluid intake, careful feeding preferably with diluted breast milk or skimmed lactic acid milk and the cautious use of sulfonamide drugs are indicated.

OTHER INFECTIONS OF LESS FREQUENCY

Erysipelas is a rare condition in the newborn, and in the past the mortality has been high. Today, however, sulfanilamide is practically a specific if given early and in appropriate doses, at least 1 grain per pound of body weight. Pyelitis is more frequent in male babies and may be associated with circumcision rites. It is a serious disease if due to Staphylococcus aureus and local kidney abscesses form. Urinary antiseptics, especially sulfathiazole in ½ grain doses per pound and extra fluids generally yield good results. Meningitis is usually a fatal infection. Peritonitis is insidious in onset and usually is recognized too late for treatment to be of any avail.

INFANT FEEDING

It would not be necessary to stress the importance of breast feeding and judicious artificial feeding in neonatal mortality if it was not for the fact that the former is not emphasized enough, the latter is started too early and increases are made too rapidly. Mistakes in this field are not easily rectified and, even if they do not lead to death, they may so harm the infant that months are required to regain full health.

From the standpoint of the infant, preparation for breast feeding, both physical and psychologic, should be an integral part of good antepartum care. It is a sad commentary on our present civilization that most obstetricians as well as prospective mothers must be sold the idea. In many metropolitan centers, breast milk stations have been established and flourish merely because many mothers refuse to nurse their babies and, when a situation arises (as so often happens) where the baby's life is at stake, they are eager and willing to buy expensive breast milk. Much can be accomplished by the obstetrician during the antepartum period in encouraging the proper mental attitude and preparing the breasts for their normal function. This can be started gradually, beginning about the fourth month of pregnancy, and should be carried out carefully and consistently until term, following definite procedures. The breasts should be washed twice daily with soap and water with a soft cloth. Later, as the nipples become accustomed, a rough cloth can be used, then changed to a soft brush and finally a hard brush. After each washing, the nipples and areolae should be anointed with hydrous wool fat. This will toughen the nipples without hardening them and prevent cracking and the occurrence of sore breasts when the baby starts to nurse. Such a program will instil in the mind of the expectant mother the desire to nurse her baby.

Granted that the proper preparation has been carried out during pregnancy, it should be a relatively simple matter to initiate this normal physiologic function after birth. It seems advisable that a rest period of six to twelve hours after delivery be given both mother and child. During the following twenty-four hours the baby should be put to the breast three times a day and allowed to nurse for three to five minutes on each breast. In the second twenty-four hours it should nurse four times daily and for five to ten minutes on each breast. From this time on the child should be nursed every four hours on one breast, twenty minutes at a time. During the first several days after birth there is some secretion of colostrum, which is thought to be important for the baby and perhaps is a means by which certain immune bodies are transmitted to it. A baby nursing vigorously at the breast will secure all the colostrum in the short period of time mentioned and will give the breast sufficient stimulation without traumatizing the tissues. There are some who believe that a three hour feeding interval is advisable, for in most instances the baby will secure more breast milk in seven feedings during the twenty-four hours than in six feedings. The four hour schedule, however, lends itself more readily to hospital routine.

A great deal of discussion has arisen over the initial weight loss of the child, and many efforts have been made to prevent this by giving complementary feedings. It is doubtful whether this initial weight loss is pathologic unless it exceeds 10 per cent of the birth weight and extends longer than four days. Complemental feedings should not be started before the end of the first week in the great majority of cases. A good many obstetricians, who also look after the infant, fail to recognize the principle involved and admit that they know nothing about infant feeding. During this trial period of two days it seems wise to give 5 per cent lactose solution, preferably by medicine dropper. The avoidance of rubber nipples in the baby's mouth will be a big help in the proper institution of breast feeding.

A good many of the objections to breast feeding are not valid ones and are the result of selfishness on the part of the mother. One need not discuss the increased resistance to disease with a lowered mortality and morbidity that occurs when a baby is breast fed. Artificial

infant feeding has become quite well regulated and it seems much easier for the mother to feed the baby on formula rather than on the natural food intended for the child. However, if the breasts are properly prepared and the correct psychologic reactions developed circumspectly during pregnancy, successful breast feeding can be readily stabilized in a few days. As a general rule, however, several weeks usually elapse before breast milk fully matures. This is the second difficult period for the mother and child, and it is complicated by the overactivity of the mother when she is allowed out of bed, the change of environment in most cases from the hospital to home conditions and, most of all, by colic, crying and hunger developing in the infant, much to the annoyance of the parents. Undoubtedly, too much attention is given to some of these minor conditions. Patience and perseverance are necessary adjuncts at this particular time. A small percentage of mothers are unable to nurse their babies because of general conditions of health or local conditions of the breasts or because they fall in the older age bracket. This percentage seems to increase the higher up in the economic scale we go. Overanxiety regarding weight gain, importunities of the nurse regarding crying and hunger, and the lack of sound judgment on the part of the physician in charge as to when complementary feeding should begin constitute some of the present day difficulties in establishing breast feeding.

Artificial feeding, on the other hand, must be carried out under certain circumstances. There are times when breast milk is not available for the child and when the institution of breast feeding would be decidedly detrimental to the health of the mother and perhaps the child. Some pediatricians have very positive views regarding the wisdom of giving a complementary or supplementary feeding of cow's milk during the first several days following birth. There is always the danger of allergy to cow's milk developing during these first few days of life when the intestinal tract of the newborn child is easily upset and digestion not well established. Unchanged protein might readily pass through the mucous membranes. In cases in which artificial feeding must be started, it seems wise to begin on the third day with a weak dilution of boiled (three minutes) milk, water and sugar, offered at the regular intervals of every four hours. One ounce of milk per pound of body weight daily is a conservative initial estimate; the sugar should be given in approximately one-third the actual need of the infant, and fluids, including milk, should equal 3 ounces per pound daily. The formula, then, for a 7 pound baby should be as follows: whole milk 7 ounces, dextrimaltose 2 tablespoons, water 11 ounces, divided into 6 bottles of 3 ounces, the baby being allowed to take as much of each bottle as it wants. A total of 3 ounces of boiled water can be given between feedings throughout the day. There is not sufficient food value in this formula for growth to take place, as it amounts to but 26 calories per pound of body weight, but despite this and in the face of the initial weight loss it is more important to establish good digestion at this time than to secure an early gain in weight. The mother should be acquainted with this principle and impressed with the necessity for patience during this trial period. An increase in food may be given when the signs are favorable, namely when the baby evinces hunger, consumes all food offered, does not vomit or have distention of the abdomen and passes normal stools. These signs will develop early in the strong, healthy child and more slowly in the delicate one. When this stage has been reached, which will vary between five and eight days, increases should be given slowly, individualizing on each case, and with the knowledge that weight gain will occur when the caloric value of the formula is above 45 calories per pound of body weight daily. Two ounces of whole milk with ⅛ ounce of sugar added for each pound of body weight will accomplish this. Total fluid requirements range from 3 to 2 ounces for every pound of weight daily.

HEMORRHAGE

Hemorrhage and hemorrhagic conditions hold a prominent place among the causes of neonatal mortality and perhaps as high a position when morbidity in the newborn is considered. Hemorrhage of traumatic origin may occur in the central nervous system by tearing or rupture of veins of varying size; in the abdomen by rupture of the liver, spleen or adrenals; under the scalp in cephalohematoma; into a muscle as sternomastoid hemorrhage; petechial hemorrhages into the retina, which occur in a comparatively large proportion of all deliveries, and from an insecurely tied umbilical cord.

Loss of blood from hemorrhagic disease of the newborn may result from any break in the continuity of the skin or mucous membranes. Melena perhaps is the best example of such blood loss, but even this may come from a bleeding duodenal ulcer or rectal polyp. Petechial hemorrhage may occur into any organ during anoxemic or septic states, and syphilis has been known to simulate hemorrhagic disease of the newborn. Repeated miscarriages and early fetal deaths when found in the history of a pregnant woman should arouse suspicion of a possible erythroblastotic condition in the baby about to be born. A heavy yellow placenta, thick vernix and yellow amniotic fluid should further suggest the possibility. The early appearance of jaundice soon after birth, a falling hemoglobin and red cell count with the presence of numerous erythroblasts should make the diagnosis more certain. Enlargement of the liver and edema may or may not be present. Repeated small blood transfusions should be instituted at an early hour. Blood should be carefully crossmatched, but on no account should the blood of the mother be used, for her blood will contain the antiagglutinins that have been the cause of the original trouble. In most cases in which the jaundice is severe some of the brain cells of the infant are often attacked, leaving signs of destruction and an aftermath which may be worse than death.

Immediate treatment of any severe hemorrhagic condition or great loss of blood in the newborn consists in blood transfusions. Milder forms need only gentle care and quiet. Sufficient clinical and experimental evidence is at hand to show that when vitamin K (5 to 10 mg.) is given to the mother during labor and/or to the child in 1 to 2 mg. doses soon after birth the petechial and gross hemorrhages can be limited and hemorrhagic disease of the newborn can be prevented. Vitamin K increases the prothrombin level of the infant's blood, which will either prevent or minimize bleeding, hasten coagulation and reduce the bleeding time. It will have little if any effect on large lacerations of the brain or liver. Since the incidence of hemor-

rhagic conditions in the newborn is less than 1 per cent of all births, it would appear unnecessary to use vitamin K in every case. Its action in hemorrhagic disease of the newborn with hypoprothrombinenemia is rapid, the disease should be easily recognized after birth and results are gratifying when given only in well selected cases. Difficult deliveries in which the possibility of injury to the baby is suspected are an indication for the use of vitamin K.

PREMATURITY

A better understanding of the position prematurity holds in the causation of neonatal mortality has been developing quite decidedly in the past few years. In spite of this knowledge regarding the problems confronting us, close to 50 per cent of all neonatal deaths are concerned with premature babies either alone or in relation to other causes of neonatal mortality. In order for statistics to be at all comparable, standard methods should be employed for recording circumstances on all premature infants. It has become the unfortunate custom to exclude from total figures one or more groups of premature infants, such as those who die in the first twenty-four hours or those under 1,000 Gm. (2¼ pounds) or some similar reason in order to make records show off to better advantage.

Prevention of prematurity remains the keynote in further reduction of infant deaths during the first twenty-four hours of life. Because postnatal care has proved very inadequate in this respect, attention is being focused on those factors arising during pregnancy, labor and delivery which precipitate too early birth; and antepartum care, as now generally understood and practiced by most obstetricians, offers more hope than pediatricians have been able to give. Current antepartum care stresses a complete diet with supplemental vitamins as one measure that will help the pregnant woman carry her fetus nearer full term, at the same time reducing the incidence of toxemia and placental displacements. Better control of syphilis during pregnancy has produced excellent results, as has the cautious use of analgesics during a premature delivery with more oxygen given with any concomitant anesthetic.

Premature infant care allows no absolute routine, the burden falling on the nursing staff, which must be both experienced and conscientious in order to be successful. The fundamental principles involved are well known but their application is often faulty as the result of overwork, frequent changes in nursing personnel and lack of patience in carrying out the infinite details necessary. The maintenance of body temperature at a fairly uniform level between 98.3 and 99.2 F. is of paramount importance. External heat is required in practically every case and is best controlled by some form of incubator or hot bed, the efficacy of which is measured by the extent to which the baby's temperature can be regulated. The temperature must be taken rectally every three hours until such time as stabilization is shown to exist. Premature jackets aid in conserving body heat, and a relative humidity in the nursery of 35 to 55 per cent is desirable. These babies should be allowed opportunity at intervals of demonstrating their ability to regulate their own body temperatures so that external heat may be withdrawn as soon as possible. Oxygen inhalations are needed almost continuously in the first few days regardless of whether or not cyanosis is present. Respiratory effort is thus reduced and energy conserved. Oxygen inhalations combined with 6 per cent carbon dioxide should be used at frequent intervals during this period to stimulate the respiratory center. This is particularly imperative for about one minute just before and after feeding, as it is generally acknowledged that this act often causes respiratory embarrassment in premature infants. Preventing infection calls for the use of every possible precaution, as suggested in a previous section of this paper. When we realize that it may be present without local tissue reaction, increased temperature or changes in white blood cells, we should be doubly alert in dealing with these small infants. Insufflation pneumonia is greatly to be feared.

Food is usually withheld for twenty-four hours, but during this time a 5 per cent lactose solution can be given by medicine dropper with the tip covered with soft rubber tubing if the swallowing reflex is present, otherwise by gavage feeding, which is successful only in the hands of skilled nurses. As progress is made and sucking evident, change is made to a Breck feeder and later to a bottle with a small, soft nipple, keeping in mind that the baby's energy must be conserved as much as possible. As a general rule feedings should be offered every two hours in amounts suitable to size and vitality (1-4 fluidrachms), the amounts being gradually increased and the intervals between lengthened. Caloric requirements aggregate 60 or 70 per pound of body weight but frequently are not attained for ten days or two weeks. Digestive capacity must be carefully estimated in each individual case, and additional calories should not be hurried in order to secure weight gain. It should be remembered always that under such circumstances gain in weight will be delayed in onset and amount and that it is imperative to wait for signs of good digestion to appear as hunger, absence of vomiting and distention and normal stools. It could easily be hazardous to the child if such criteria are not observed, for more harm is done by overfeeding than by insufficient food in the first two weeks. Breast milk is the food of choice, although evaporated or powdered milk, as Olac or Similac, may be used. Vitamins should be started as soon as feedings are well established, usually at 2 weeks of age. Weighing should not be done more often than every two days, perhaps once a week with smaller premature infants. A change of environment to the home is not advisable until the weight is well over 5 pounds (2.3 Kg.).

COMMENT

In conclusion, the principal problems with which we are confronted during the immediate postnatal period are asphyxia, hemorrhage, infection, feeding and prematurity. The old adage of an ounce of prevention being worth a pound of cure is particularly applicable when dealing with the newborn, and there is convincing evidence that future progress in reducing neonatal mortality will be achieved primarily through the closer cooperation of pediatricians and obstetricians. Competent antepartum care and proficient management of labor and delivery will greatly mitigate the hazards of asphyxia, hemorrhage and prematurity, while conservative and gentle treatment of these young infants with meticulous cleansing of the upper respiratory tract and skin, sustaining warmth and cautious feeding will

enhance the chances of survival in most cases. Errors in judgment or failures in technic are not easily overcome in the newborn, and every effort should be made to give these babies the benefit of the combined knowledge of each specialty. Success or failure can ensue, depending on our ability to recognize danger signals, our resourcefulness in combating them and patience in dealing with the complexities encountered.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. POTTER, SAGE, TORPIN AND TYSON

DR. STEWART H. CLIFFORD, Boston: Dr. Torpin's thesis that an adequately controlled test of labor will reduce operative delivery and thus benefit the fetus is fundamentally sound. The importance of x-ray pelvimetry prior to labor and x-ray observations on the progress of labor in certain situations cannot be overemphasized. In time the x-ray control of abnormal labor may well be as required a procedure as the use of the x-rays in the treatment of fractures. Asphyxia is certainly a most important cause of live born infant death—Potter and Adair found it responsible for 40 per cent and we at the Boston Lying-in Hospital have found it the cause of 58 per cent of our live born infant deaths. The treatment of fetal anoxia through the administration of 100 per cent oxygen to the mother would seem to be a sound physiologic procedure, provided the placental cord circulation is functioning. I should like to ask if there is not a danger of reaching an explosive concentration of gas if straight oxygen is given a mother under cyclopropane or ethylene anesthesia. I believe that nitrous oxide anesthesia adds to fetal anoxia, and it is now seldom used at the Boston Lying-in Hospital. Morphine likewise is seldom used because of its depressant effect on the infant's respiratory center. The safest way to deliver a premature infant from below is without the use of any general anesthesia or analgesia. Delaying the normal delivery of the fetal head by pressure on the perineum should be mentioned to be bitterly condemned—it may cause the most severe fetal damage through asphyxia. On only one point do I take strong issue with Dr. Torpin, and that is with regard to direct laryngoscopy and intratracheal insufflation of oxygen. The procedure is not without risk even in the most highly trained hands. Dr. Torpin states that in his series of 6,000 deliveries "1 in 10 or 15 newborn infants needs insufflation." This means that 400 to 600 babies in his series were thought to require direct laryngoscopy and tracheal intubation. For a good many years the neonatal mortality at the Boston Lying-in Hospital has been around 15 per thousand live births, and our deliveries have run around 4,000 per year. With all this experience we have as yet not found it necessary or advisable to adopt the method of resuscitation advised by Dr. Torpin. We rely on clearing the air passages by postural drainage and suction followed by a closed method of administering oxygen under controlled pressure. Dr. Tyson has made the important point that the high infant mortality of the first twenty-four hours of life cannot be charged to a failure in pediatric care, since in most cases it is due to factors operating prior to or during labor. The deaths in the first twenty-four hours may properly be considered an obstetric responsibility. The deaths occurring beyond this period from conditions that became operative after birth may well be considered a pediatric responsibility. Material reduction in the largest group of neonatal deaths, occurring in the first twenty-four hours, can be achieved only along obstetric lines of approach: material reduction in the later neonatal deaths may well be the result of pediatric studies. In this field the obstetrician and the pediatrician must work together that the specialized knowledge of each may benefit the newborn infant. At the Boston Lying-in Hospital the extensive use of analgesia and anesthesia has been accompanied by neither an increased stillbirth rate nor an increased incidence of death from asphyxia. However, in the case of premature labor the best results may be anticipated if such medication is not used. We are encountering various degrees of acute hemolytic anemia of the newborn with increasing frequency. In the light of present knowledge concerning the etiologic role of the Rh factor in this condition, the older terminology of erythroblastosis fetalis of the congenital hydrops, icterus gravis and congenital anemia types might well be abandoned. Every mother in our clinic is now having her Rh type determined in the antepartum clinic. If the mother is of the Rh negative type, a definite Rh negative donor is found for her in case a transfusion should become necessary. If the mother is Rh negative her husband is tested, and if he is Rh positive her blood is watched throughout her second and subsequent pregnancies for the appearance of anti Rh agglutinins. If the primiparous Rh negative mother gives a history of having had a transfusion in the past, her blood is watched through pregnancy for the appearance of anti Rh agglutinins. As a result of this routine the hemolytic anemias of the newborn may be anticipated and treated soon after birth. All transfusions given to infants suffering from acute hemolytic anemia are from compatible Rh negative donors—never from the mother.

DR. RUPERT E. ARNELL, New Orleans: By the most conservative estimates at least half of the neonatal deaths are preventable. They do not occur when adequate care is available. Without consideration of the economic, social and educational problems involved, responsibility for reducing neonatal mortality ultimately must rest with the medical profession. Prophylaxis begins ideally with premarital and preconceptional examinations and is followed in a broad, continuous program by adequate, intelligent care and supervision during pregnancy, parturition and after delivery. Preventive measures during pregnancy and labor produce double rewards in that two lives are preserved. Possibly certain problems dealing with the cause and prevention of premature labor have received insufficient attention. Promiscuous induction of labor for convenience should be condemned. Increased medical knowledge and improvements in therapy reduce the incidence of premature labor, spontaneous and induced, in many constitutional disorders and physical abnormalities. In this respect, diet and nutrition have assumed a sphere of major importance. In a recent dietary survey of a large group of private patients as well as white and Negro charity patients dietary defects and deficiencies were found with startling frequency. Dangerously low intakes of protein, vitamins and minerals were discovered in 30 per cent of the Negro, 20 per cent of the white charity and 10 per cent of the private patients. The fetal mortality in this group was approximately eight times greater than in the good diet group. Neonatal death due to birth injury occurs most frequently following prolonged labor and difficult operative delivery. In untrained hands catastrophe is almost inevitable. The necessity for many of these extensive and dangerous procedures can be obviated by the judicious application of a trial of labor combined with careful roentgenologic studies. There is wide divergence of opinion regarding criteria for test of labor and trial of labor, particularly the length of labor. The criteria suggested by Dr. Torpin for test of labor are valid for normal patients but are too inflexible and somewhat strict for abnormal ones. Careful individualization is necessary, modifying criteria when indicated. No one questions the value of x-ray examination in obstetrics, but too much reliance is placed on the prognostic accuracy of pelvicephalography. Clinicians of wide experience seldom require roentgenograms to determine the presence of disproportion in labor. Not infrequently, information of greater value is provided by a careful vaginal examination. At the Charity Hospital in New Orleans elective cesarean section is reserved for cases with obvious indications, whereas questionable dystocias are permitted trial of labor, ranging from one to twenty-four hours. In the five year period ended July 1, 1943 there were 28,066 deliveries with 466 cesarean sections, an incidence of 1.66 per cent. Many instruments and machines have been invented and various technics have been advocated for the treatment of asphyxia and apnea neonatorum. Resuscitation after delivery has been made needlessly complicated. Any physician, after an hour's instruction, can become adept in the use of a tracheal catheter and will find this simple, safe and cheap technic more effective than complicated methods. No delivery should be conducted, in the hospital or the home, without ready access to several tracheal catheters of different sizes.

In the absence of contraindications, breast feeding should be almost mandatory. Pursuing a program similar to that suggested by Dr. Tyson, we were able in one of the well baby clinics of the New Orleans Health Department to increase the incidence of breast feeding from 30 per cent to 90 per cent within a period of six months.

DR. KATHARINE K. MERRITT, New York: Pediatricians will welcome Dr. Tyson's statement that their chief object is the "prevention of emergencies arising in the postnatal period." There will be some disagreement with his statement that resuscitating machines are necessary to start and maintain respirations when asphyxia is present. At the Sloane Hospital for Women only the Flagg apparatus is used, and that only rarely. Nikethamide and alpha lobeline are used rarely. After blebs and pustules are opened, 95 per cent alcohol is applied and heat is used to keep the affected areas as dry as possible. Sulfathiazole in vanishing cream is applied to the lesions. Dr. Tyson will have much support in his belief that many newborn infants fail to get an adequate breast milk supply, because of the too prevalent habit of giving complementary feedings before the end of the first week; he feels rightly that obstetricians and pediatricians should not be alarmed at an initial weight loss which does not exceed 10 per cent of the birth weight and that "crying and hunger" should not cause consternation. In giving the figures for "hemorrhagic conditions" a definition of terms should be made. If retinal hemorrhages are included, the incidence will surely be greater than 1 per cent. In accordance with the policy of prevention rather than cure, vitamin K is routinely given into the mother's vein in the delivery room at the Sloane Hospital for Women, except when the caput is in sight on admission. In that event the infant is given vitamin K intramuscularly. Dr. Tyson stresses the importance of the prevention of prematurity and the presence of a skilled nursing staff. I agree with Blackfan and Yaglou that it is better to let the smallest premature infants stabilize their temperature at a degree or two below the accepted "normal" rather than risk hyperpyrexia by trying to force the level up. The use of carbon dioxide with oxygen has been abandoned in some newborn services, since Eastman has demonstrated its lack of rationale. Instead of "alterations of bathing technic" in an effort to reduce skin infections, the Sloane Hospital for Women has abandoned bathing altogether. The infant's skin is not touched at all, except to wash off blood from the scalp and face right after birth and to apply oil in the neonatal period if the infant's skin is very dry and cracked. It is also felt that too much cleansing of the upper respiratory tract immediately after birth may abrade the mucous membrane, thereby creating a port of entry for bacteria.

DR. JOHN PARKS, Washington, D. C.: Dr. Torpin and Dr. Sage indicate the dangers in breech presentations. As long as the cord pulsates, the infant receives oxygen. Injuries and asphyxia in breech deliveries are more often avoided by a finger on the cord than by an eye on the clock. Cesarean section solely for saving the infant is frequently unsuccessful. Cesarean section is as much an operative delivery for the infant as it is for the mother. In prolonged rupture of the membranes, the infant's chances of infection in utero may be reduced by administering sulfonamides to the mother. Maternal metabolism and adequate diet influence fetal development. Dr. Tyson's excellent summary on breast feeding is of timely importance. Twelve per cent of the live births at Gallinger Municipal Hospital in the last five years were premature. Two thirds of all fetal deaths occurred in premature infants. In 1,202 patients with toxemia of pregnancy, 18.2 per cent of the infants were premature. In 254 patients with premature separation or abnormal implantation of the placenta, 58 per cent of the infants were premature. One or both infants weighed less than 5 pounds 8 ounces (2.5 Kg.) in 77.5 per cent of 116 twin pregnancies. Many patients who had premature infants gave histories of intercourse occurring less than forty-eight hours before rupture of membranes or the onset of labor. Syphilis, congenital malformations and acute systemic diseases were lesser contributory factors. Since the majority of obstetric complications have a more profound effect on the fetus than on the mother, infant mortality is a more delicate index of good obstetrics than is maternal mortality. I agree with Dr. Potter that "if a sufficient number of people have a great enough desire" neonatal mortality can be reduced in the nation as remarkably as it has been in Chicago.

DR. EARL C. SAGE, Omaha: The causes of neonatal mortality in their order of importance are (1) prematurity, (2) birth trauma, (3) asphyxia and (4) infection, which assumes a minor role. I agree with Dr. Torpin on the value of x-ray pelvimetry in the antepartum period and during the early stage of labor, although we must recognize that the majority of babies are delivered by general practitioners under circumstances which preclude the use of the x-rays. Without minimizing the services of the obstetrician, one should not overlook the fact that improvement in nursing care would tend materially to reduce the neonatal death rate, especially among premature infants. Too many nurseries are understaffed, and even more of them often rely on insufficiently trained student nurses under inadequate supervision. What small gain has been made in our neonatal record has come principally from the larger maternity hospitals or teaching hospitals where obstetricians and pediatricians have pooled their knowledge to their mutual advantage and for the benefit of the infants. In Nebraska at large, following several years of outstate refresher courses in obstetrics and gynecology, there has been a decrease in the numbers of babies who died shortly after birth from 1,331 in 1930 to 764 in 1941. It is justifiable to attribute this improvement to a better understanding by the general practitioner of the mechanism of labor and neonatal physiology. Large scale improvement in the death rate among newborn babies will come with better obstetric and pediatric skill acquired by the rank and file of medical practitioners. The issue is primarily educational. We may look forward to the time when the blood of each mother who had an unexplained stillbirth or neonatal death is examined for the presence of the anti Rh or other atypical agglutinins. Schwartz and Levine have shown that in cases of intrauterine death occurring well in advance of labor, as evidenced by fetal maceration, the incidence of erythroblastosis is somewhere between 16 and 29 per cent. Most cases of prematurity appear unrelated to the Rh factor. Efforts to reduce neonatal mortality further must be directed toward conditions associated particularly with early infancy (prematurity), birth injuries and congenital malformations as well as maternal illness.

DR. RALPH M. TYSON, Philadelphia: Careful supervision of the nutrition of the mother during pregnancy has much to do with securing a healthy baby. The symposium fails to stress sufficiently the importance this phase of antepartum care has in relation to the prevention of neonatal mortality. Too often mothers disregard the dietary regimen advised by their obstetricians, either through thoughtlessness or because the physician has not impressed fully on the patient the necessity for conscientious adherence to the diet. Dr. Torpin's suggestion that oxygen be given to the mother during emergency operative procedures should be of inestimable value in preventing anoxemia in the fetus. More emphasis could be placed on a closer study of the fetal heart rate during labor and delivery in order that the first signs of anoxia might be detected. It was interesting to note that various methods of delivery are successful when placenta previa complicates the situation. The prevention of prematurity was not stressed enough. It is not generally appreciated what an important part the position of the capillary bed in the air vesicles of the lungs of premature infants has to do with their survival. If oxygen cannot be gotten into the blood stream of the child through the lungs, not much success will be had in saving that particular infant. Hemorrhage and hemorrhagic disease in the newborn must be clearly differentiated. The former almost always is due to an injury in which the continuity of some organ or part of the body is broken and occurs more frequently than the latter condition, which usually refers to some form of blood dyscrasia, either hemorrhagic disease of the newborn or an acute hemolytic anemia. Dr. Clifford's insistence on the selection of a proper donor (negative Rh) in cases of erythroblastosis is timely.

METABOLIC STUDIES ON PATIENTS WITH CANCER OF THE GASTRO-INTESTINAL TRACT

XIV. THE EFFECTS OF HIGH PROTEIN DIETS ON THE PREVENTION OF POSTOPERATIVE HYPOPROTEINEMIA IN PATIENTS WITH GASTRIC CANCER

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AND
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Recent investigations here and elsewhere have demonstrated that a pronounced negative nitrogen balance occurs in patients after intra-abdominal operation.[1] In most instances this nitrogen loss does not seriously affect the concentration of protein in the serum, but in patients with gastrointestinal cancer the development of significant hypoproteinemia is an almost uniform finding.[2] The gravity of postoperative hypoproteinemia is widely recognized, and any measures which would successfully prevent its occurrence should prove most useful.

The development of postoperative hypoproteinemia in the patients with gastrointestinal cancer apparently is the result of numerous factors. Among these are that (*a*) frequently the patient is already hypoproteinemic when he comes to surgery, a fact which strongly suggests that his protein stores are depleted;[3] (*b*) the functional capacity of his liver is very much impaired[4] and therefore the fabrication of plasma albumin by this organ is likely to be limited;[5] (*c*) after a resection of some portion of the alimentary tract a necessarily long period elapses before he again can receive a normal protein intake. Although it is possible by frequent plasma and blood transfusions to maintain normal concentrations of plasma proteins in these patients, this method in many instances becomes unfeasible.[6] Hence it appeared desirable to ascertain whether or not the preoperative administration of very high protein diets could prevent the usual postoperative hypoproteinemia.

CLINICAL MATERIAL AND METHODS

The present study was made in a group of 6 patients with carcinoma of the stomach who were fed diets of from 41 to 47 calories per kilogram daily in three equal meals. These diets contained from 101 to 196 Gm. of protein (2.18 to 2.68 Gm. per kilogram of body weight). In all the patients the carcinoma was found at laparotomy to involve the upper segment of the stomach and hence to be inoperable.

The methods for the complete collections of stool and urine have been described in a previous communication.[7] Nitrogen was analyzed in the food, stool and urine by a Kjeldahl technic, and serum albumin and globulin were measured by the method of Robinson, Price and Hogden.[8] Plasma volumes were measured by the method of Gregersen and Stewart.[9]

Effects of the Oral Administration of Large Amounts of

Patient	Period	Daily Average Calories per Kg.	Intake of Protein, Gm. per Kg.	Days	Average Nitrogen Balance, Gm. per Day	Concentration at Onset of Period of Serum: Protein, Gm. per 100 Cc.	Albumin, Gm. per 100 Cc.	Globulin, Gm. per 100 Cc.	Concentration at End of Period of Serum: Protein, Gm. per 100 Cc.	Albumin, Gm. per 100 Cc.	Globulin, Gm. per 100 Cc.
G. C.	Preoperative.....	42	2.66	17	+17.1	7.2	3.6	3.6	7.8	3.8	4.0
	Postoperative.....	7.5	0.44	3	—4.6	7.8	3.8	4.0	7.5	3.5	4.0
H. P.	Preoperative.....	44	2.68	22	+12.45	6.4	4.2	2.2	7.2	5.0	2.2
	Postoperative.....	13	0.25	8	—9.4	7.2	5.0	2.2	6.9	5.0	1.9
R. M.	Preoperative.....	41	2.46	18	+11.45	6.3	3.7	2.6	6.8	4.7	2.1
	Postoperative.....	10.5	0.31	9	—4.8	6.8	4.7	2.1	6.1	4.0	2.1
R. S.	Preoperative.....	47	2.56	10	+9.3	5.6	4.1	1.5	6.5	4.5	2.0
	Postoperative.....	25	0.81	14	—1.2	6.5	4.5	2.0	6.1	3.8	2.3
L. C.	Preoperative.....	45	2.56	20	+18.5	5.85	3.9	1.95	6.95	4.1	2.85
	Postoperative.....	13	0.62	12	—5.4	6.95	4.1	2.85	6.2	4.4	1.8
P. T.	Preoperative.....	32	2.18	18	+8.2	6.2	3.8	2.4	7.0	5.1	1.9

RESULTS

As previously stated, patients with gastrointestinal cancer usually have low serum protein levels before operation, an observation which would indicate that their protein stores already are considerably depleted.[3] Hence it was reasonable to assume that if these stores could be reestablished preoperatively the patient might better sustain the unavoidable nitrogen loss after operation and not develop a serious degree of hypoproteinemia.

To accomplish this purpose, 6 patients with gastric cancer were fed diets which contained from 41 to 47 calories and from 2.18 to 2.68 Gm. of protein per kilogram of body weight. When the feeding of these diets was begun, the serum protein levels of 5 of these 6 persons were abnormally low, and in 4 the low values were due chiefly to decreased concentrations of albumin.

After the diets were fed for from ten to twenty-two days and the patients had retained from 51.2 to 115.5

From the Memorial Hospital for the Treatment of Cancer and Allied Diseases.

1. Brunschwig, A.; Clark, D. E., and Corbin, N.: Postoperative Nitrogen Loss and Studies of Parenteral Nitrogen Nutrition by Means of Casein Digest, Ann. Surg. **115:** 1091-1105, 1942. Ariel, Abels, Pack and Rhoads.[2]

2. Ariel, I. M.; Abels, J. C.; Pack, G. T., and Rhoads, C. P.: Metabolic Studies in Patients with Cancer of the Gastrointestinal Tract: XI. Postoperative Hypoproteinemia and Relationship of Serum Protein Fall to Urinary Nitrogen Excretion, Surg., Gynec. & Obst. **77:** 16-20, 1943.

3. Ariel, I. M.; Rekers, P. E.; Pack, G. T., and Rhoads, C. P.: Metabolic Studies in Patients with Cancer of the Gastrointestinal Tract: X. Hypoproteinemia and Anemia in Patients with Gastric Cancer, Ann. Surg. **118:** 366-371, 1943.

4. Abels, J. C.; Rekers, P. E.; Binkley, G. E.; Pack, G. T., and Rhoads, C. P.: Metabolic Studies in Patients with Cancer of the Gastrointestinal Tract: II. Hepatic Dysfunction, Ann. Int. Med. **16:** 221-240, 1942.

5. Madden, S. C., and Whipple, A. H.: Plasma Proteins: Their Source, Production and Utilization, Physiol. Rev. **20:** 194-217, 1940.

6. Binkley, G. E.; Abels, J. C., and Rhoads, C. P.: The Treatment of Postoperative Hypoproteinemia in Patients with Cancer of the Colon and Rectum, Ann. Surg. **117:** 748-753, 1943.

7. Rekers, P. E.; Abels, J. C., and Rhoads, C. P.: Metabolic Studies in Patients with Cancer of the Gastrointestinal Tract: IV. Fat Metabolism, a Method of Study, J. Clin. Investigation **21:** 243-248, 1943.

8. Robinson, H. W.; Price, J. W., and Hogden, C. A.: The Estimation of Albumin and Globulin in Serum, J. Biol. Chem. **120:** 481-498, 1937.

9. Gregersen, M. I., and Stewart, J. D.: Simultaneous Determination of the Plasma Volume and the "Amilable Fluid" Volume with Sodium Thiocyanate, Am. J. Physiol. **125:** 142-152, 1939.

Gm. of protein per day, the concentrations of albumin increased in all by from 0.2 to 1.3 Gm. per hundred cubic centimeters and the total circulating albumin by from 10 to 37 Gm., as shown in the table. The concentrations of globulin increased in only 3 persons by from 0.4 to 0.9 Gm. per hundred cubic centimeters; in 1 this fraction remained unchanged and in 2 decreased by 0.5 Gm. per hundred cubic centimeters. In all, however, because of the rise in plasma volumes, the total circulating globulin increased by from 3 to 34 Gm. The net effect of these changes was that at the time of operation none of the 6 patients were hypoproteinemic. It is interesting to note, however, that of the total amounts of protein retained (from 580 to 2,310 Gm.) only from 0.55 to 3.5 per cent could be accounted for by the formation of serum albumin and from 0.3 to 1.8 per cent by the formation of serum globulin. All the rest apparently was diverted to the formation of tissue protein.

In a previous study [2] in which the concentrations of protein in the serum of 36 patients with gastric cancer were measured both on the day of operation and during the next five days, the average decrease of these levels was 0.63 Gm. per hundred cubic centimeters. During this immediate postoperative period 67 per cent of the patients had levels below 6.1 and 41 per cent below 5.6 Gm. per hundred cubic centimeters.

Protein on the Metabolism of Nitrogen in Patients with Gastric Cancer

Plasma Volume at		Total Amount at Onset of Period, of Serum			Total Amount at End of Period, of Serum			Per Cent of Retained Protein Diverted to Formation of Serum		Per Cent of Nitrogen Lost Derived from Serum	
Onset of Period, Cc.	End of Period, Cc.	Protein, Gm.	Albumin, Gm.	Globulin, Gm.	Protein, Gm.	Albumin, Gm.	Globulin, Gm.	Albumin	Globulin	Albumin	Globulin
4,450	4,450	320	160	160	360	170	190	0.55	1.65		
4,450	3,950	360	190	190	321	145	176	....	....	28.6	16.0
2,250	2,600	173	119	54	223	156	67	2.75	0.75		
2,600	2,325	223	156	67	160.5	116.5	44	....	....	8.7	4.9
3,130	3,260	192	132	60	210.5	142	68.5	0.82	0.65		
3,260	1,860	210.5	142	68.5	113	74	39	....	....	25.4	11.0
1,820	1,900	102.5	75	27.5	124	86	38	1.0	1.8		
1,900	1,700	124	86	38	103	64	39	....	....	3.0	0
1,870	2,540	108.5	72.5	36	170	100	70	1.2	1.4		
2,540	1,755	170	100	20	109	77	32	....	....	5.7	9.3
2,460	2,780	160	110	50	195	142	53	3.5	0.3		

In contrast to these results were the findings in the patients included in the present investigation. Five of these were followed after operation. Although all were in negative nitrogen balance for from three to fourteen days postoperatively by from 1.2 to 9.4 Gm. per day, none developed protein concentrations below 6.1 Gm. per hundred cubic centimeters. The average decrease in the concentration of serum protein was 0.49 Gm. per hundred cubic centimeters. In 3 instances the concentrations of albumin decreased from 0.3 to 0.75 Gm., in 1 it remained unchanged and in 1 it increased 0.3 Gm. per hundred cubic centimeters. In all the total albumin diminished by from 22 to 68 Gm. In 2 patients the concentrations of globulin fell by 0.30 to 1.05 Gm., in 2 it remained constant and in 1 it rose by 0.3 Gm. per hundred cubic centimeters; in 3 the total circulating globulin decreased by from 14 to 29.5 Gm., in 1 it remained relatively unchanged and in 1 it increased 12 Gm.

From these results it would appear that the preoperative oral administration of large amounts of protein could induce a considerable nitrogen retention and remission of hypoproteinemia. In spite of the postoperative negative nitrogen balance and fall in the concentration and total amount of circulating protein, none of the patients developed a significant degree of hypoproteinemia. This maintenance of relatively normal concentrations of serum protein probably is due to (*a*) alterations of plasma volume and (*b*) the fact that in 4 of the 5 patients the amounts of circulating protein lost after operation are about equal to the amounts fabricated in the period of nitrogen retention. In the fifth patient the plasma protein loss after operation was five times that formed in the preceding period. It is interesting to note that, although only from 1.47 to 3.8 per cent of the retained protein had been diverted to the formation of circulating proteins, the decrease of this protein fraction accounted for from 13.6 to 44.6 per cent of the nitrogen loss after operation.

COMMENT

From the evidence presented it would appear that the ingestion of large amounts of protein significantly increased the formation of circulating albumin and globulin. Since only about from 3 to 5 per cent of body protein is that in the plasma, it is not remarkable that only about 3 per cent of the retained nitrogen is diverted to plasma protein formation. This relatively small diversion has been observed also in hypoproteinemic dogs.[10] A reduced protein concentration in the plasma, therefore, probably is only a peripheral phase of a general depletion, and the administration merely of 1 or 2 liters of plasma to the hypoproteinemic patient during his postoperative period of negative nitrogen balance cannot be expected to increase significantly his concentration or total amount of serum protein. Although nitrogen balance frequently may be attained postoperatively by the administration of considerable amounts of blood, plasma and amino acids, this technic is not always feasible. The safer course, probably, is to establish preoperatively adequate protein stores which can be drawn on by the patient after operation. By this last means the present investigation demonstrates that at the end of the periods of negative nitrogen balance the concentrations of protein in the serum of the patients studied in no instance fell below 6.1 Gm. per hundred cubic centimeters. At this level the consequences of hypoproteinemia are decidedly remote. In contrast to this finding was the fact that in another group of 36 patients with gastric cancer who were fed preoperatively

10. Sachar, L. A.; Horvitz, A., and Elman, R.: Studies on Hypoalbuminemia Produced by Protein Deficient Diets: I. Hypoalbuminemia as a Quantitative Measure of Tissue Protein Depletion, J. Exper. Med. 75: 453-459, 1942.

only the usual hospital diets the concentrations of serum protein in 10 instances fell during the first five days after operation to less than 5.6 Gm. per hundred cubic centimeters, a level at which the complications of hypoproteinemia frequently develop.

CONCLUSION

By the preoperative ingestion of considerable amounts of protein for from ten to twenty-two days, serious degrees of hypoproteinemia can be prevented in patients with gastric cancer during their postoperative periods of negative nitrogen balance.

Clinical Notes, Suggestions and New Instruments

PENICILLIN IN GAS GANGRENE

REPORT OF A SUCCESSFULLY TREATED CASE

W. B. McKNIGHT, M.D.; RICHARD D. LOEWENBERG, M.D., AND VIRGINIA L. WRIGHT, M.D., PORTOLA, CALIF.

In their recent cooperative study on penicillin in the treatment of 500 infections, Keefer and his associates [1] stated that "experimentally it is a potent agent in gas bacillus infections, but up to the present time there are no studies on human cases." The comparatively rare occurrence of this important war infection in civilian life determines us to report a preliminary contribution. We observed a severe gas infection in a 7 year old girl. After all routine measures, including serums, sulfonamides and amputation, had failed, Dr. Chester Keefer [2] provided us with penicillin in sufficient quantities to treat successfully the patient, whose outlook seemed hopeless. The isolation of our mountain hospital made it unprepared and unequipped to furnish exhaustive laboratory studies. The clinical significance of our observation, however, remains important enough to justify more investigations of this treatment.

REPORT OF CASE

Y. T., a girl aged 7 years, of normal development, who had an uncontributory history of the common childhood diseases, on Aug. 15, 1943 was found late in the evening lying on the porch of her home with a fractured left forearm. How she had fallen or how long she had been lying on the dry wood floor could not be ascertained. When first seen she was immediately transferred to the hospital. In the middle of the left forearm at the medial side was a bleeding puncture wound, which was sprinkled with sulfathiazole powder and sterile dressed. The arm was immobilized on a splint. Tetanus antitoxin 1,500 units was injected. X-ray examination showed angulation of the proximal ulnar fragment; the radius was intact. On the following morning there was no fever, but the child complained of slight pain. Under ether anesthesia the ulna was reduced before the fluoroscope and a cast was applied. On the third day, the patient was very restless, incessantly crying for her mother. The temperature was 98 F., the pulse rate 94. A slight discoloration of the hand was attributed to the cast, which was cut open and removed. The next morning the temperature rose suddenly to 102 F., the pulse rate to 140; the whole left forearm showed a deeply livid discoloration. No pulsation was felt in the left hand, no movements of the fingers were possible, and the muscles presented emphysematous vesicular crepitation when palpated. The no longer doubtful diagnosis of gas gangrene could be confirmed by multiple air bubbles along the muscle sheaths in x-ray films of the left forearm. Immediately 20,000 units of gas antitoxin was injected intravenously, sulfathiazole 3 Gm. was given by mouth, broad length incisions through the left hand and forearm were irrigated with peroxide, sulfathiazole crystals were topically applied, and high voltage x-rays were given.

On August 19 the twice repeated antitoxin injections (40,000 units) and the continued sulfonamide medication did not prevent the progress of the infection to the upper left arm and axilla, as x-ray examination clearly showed. Leukocytes numbered 17,300 and hemoglobin was 80 per cent. On August 20 the continuous high temperature of 102 F., pulse rate 126 and the ill smelling mummification of the entire left arm made a further postponement of an operation impossible. Under ether anesthesia a high amputation of the left arm was performed (Dr. W. B. McKnight). During the night the patient was delirious and temporarily semicomatose. Blood plasma was given. For several days after the amputation air bubbled from the edematous axilla wound during the dressing. On the seventh day, August 22, shortly after midnight, the shipment of penicillin arrived. Immediately 20,000 units in isotonic solution of sodium chloride was given intravenously, followed by 40,000 units as a continuous drip. The temperature rose to 104 F. and leukocytes numbered 35,000. For the next three days a continuous intravenous drip was maintained with short intervals for rest. In addition 20,000 units was twice injected intramuscularly into the stump; altogether 240,000 units was given On August 25 the penicillin drip had to be discontinued because of the general edematous condition of the patient. The puffed-up eyelids could hardly be opened. The temperature was 101 F., hemoglobin 55 per cent, erythrocytes 1.6 million, leukocytes 29,000. A lack of donors made a planned blood transfusion impossible. The general condition and the intake of food appeared improved. It was noteworthy how little the loss of her arm seemed to affect the patient, who was mentally far ahead of her 7 years and showed an unusual degree of cooperation. Tissue specimens were sent for bacteriologic examination to the Department of Public Health in Berkeley and to the laboratory of Dr. Lawrence Parsons in Reno. At this time it was not possible to identify the specific strain of the gas bacillus group. The patient was seen at the height of the infection by four experienced clinicians who had not the slightest doubt about the diagnosis so clearly demonstrated in the x-ray films. During the ensuing week the temperature gradually dropped below 100 F. and the wound cleaned up. On September 6 the erythrocytes had increased to 3.2 millions and the hemoglobin to 85 per cent; the leukocytes had dropped to 4,800. Under antianemic and symptomatic treatment the patient made an uneventful recovery. Exactly one month after her accident, on September 16, she could be sent home. During the following month she reported regularly for ambulatory treatment of her wound, which was nearly closed on October 16.

COMMENT

The case history of a compound fracture in a 7 year old girl, complicated by gas infection and successfully treated after all other measures had failed with 240,000 units of penicillin, deserves some additional comment on its unusual features. With the exception of a fatal railroad injury many years ago, this was the first case of gas infection within the last ten years in this High Sierra region. The earliest possible suggestive clinical symptoms before any other diagnostice signs were present were the unexplainable severe pains and excitement. As a last resort penicillin was given after all hope had been abandoned for a recovery, which came like a miracle. Aware that only control series of cases can establish the usefulness of a new potent agent in this infection, uncommon in civilian life, our observation might encourage and justify this new treatment in future cases of this ever present menace of war injuries.

1. Keefer, C. S.; Blake, F. G.; Marshall, E. K., Jr.; Lockwood, J. S., and Wood, W. B., Jr.: Penicillin in the Treatment of Infections, J. A. M. A. **122**: 1217 (Aug. 28) 1943.

2. "Dr. Chester Keefer, chairman of the Committee on Chemotherapeutic and Other Agents, Division of Medical Sciences, National Research Council, and consultant to the Committee on Medical Research of the Office of Scientific Research and Development, recommended that penicillin be provided from a supply assigned to be used in clinical investigation."

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

HOWARD A. CARTER, Secretary.

ZENITH RADIONIC HEARING AID ACCEPTABLE

Manufacturer: Zenith Radio Corporation, 6001 Dickens Avenue, Chicago.

The Zenith Radionic Hearing Aid is a vacuum tube instrument consisting of a transmitter, a magnetic receiver and a battery unit. The device was examined by the Council and the results of this examination are as follows:

Model #HA.—Weights and overall dimensions of the various parts were as follows:

Transmitter, 5¼ inches by 2¾ inches by 1 inch, weight 5 ounces.
Receiver ⅞ inch in diameter.
Batteries 13 ounces.
Total weight of the instrument, cords and batteries, 20 ounces.

Batteries.—Voltages and current drains are as follows:

A-Battery 1.5 volts
Current drain at ½ volume 84 milliamperes
Current drain at full volume 84 milliamperes
B-Battery 45 volts
Current drain at ½ volume 0.31 milliampere
Current drain at full volume 0.54 milliampere

All required data have been furnished by the manufacturer.

Acoustical Gain.—(Average of observations of two trained observers using fitted ear molds seated 5 feet from loud speaker delivering frequencies of pure sine wave characteristics.)

Observations have been made of response at ½, ¾ and full intensity and a change in characteristic obtained by shifting tone control. Intensity readings were observed at frequencies 256, 512 and so on, as shown.

Volume Control Set at	Tone Control at Position #1						
	256	512	1,024	1,448	2,048	2,896	4,096
½	7	5	26	21	15	8	3
¾	10	11	38	27	24	13	10
Full	11	13	39	26	25	14	9
Volume at ½ Full Tone Control Set at							
#1	7	5	26	21	15	8	3
#2	9	5	15	21	15	18	14
#3	7	8	11	14	9	11	15
#4	10	4	12	17	8	12	9

The values given show gain at ½, ¾ and full volume control settings under ideal conditions, but not the electrical amplification as shown by measurements of electrical input and output.

Physical and Mechanical Features.—The instrument consists of a black plastic molded case with pleasing appearance but somewhat larger than the majority of available hearing aids. The set is well made and of sturdy construction. A practical feature is the arrangement by which the pocket clip can be attached to either the front or the back of the instrument. Three controls consisting of an on-and-off switch, a disk shaped volume control and a tone control with four points of different frequency emphasis are at the top of the case. In the circuit there is a supplementary automatic volume control. The set includes four sizes of earpieces and a small plastic tube which attaches to the magnetic receiver. Over the end of the plastic tube is fitted the flanged soft rubber earpiece which holds the tube in position in the external meatus of the canal. This device may be somewhat difficult to adjust, and some patients tested did not like to use it and preferred a plastic molded ear piece.

Zenith Radionic Hearing Aid Model HA.

Performance.—In general the instrument performed as represented. The tone control did not give quite as straightforward a shift in frequency response as might be desired. This criticism may be applied to any make of instrument having tone control adjustments.

The booklet of instructions is complete, the servicing program is good, the guaranty form is standard.

The manufacturer does not advocate audiometric testing when fitting the Zenith Radionic Hearing Aid. The firm holds this to be unnecessary, since the hearing aid is satisfactorily fitted in the opinion of the manufacturer in most cases by the patient adjusting the tone and volume control of the instrument to suit his hearing deficiency. In cases in which the earpiece supplied with the instrument is unsatisfactory for the patient, an especially fitted plastic earpiece can be obtained from the manufacturer at a nominal cost.

The Council on Physical Therapy voted to accept the Zenith Radionic Hearing Aid for inclusion in its list of accepted devices.

Council on Foods and Nutrition

ACCEPTED FOODS

THE FOLLOWING ADDITIONAL FOODS HAVE BEEN ACCEPTED AS CONFORMING T THE RULES OF THE COUNCIL ON FOODS AND NUTRITION OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO ACCEPTED FOODS.

GEORGE K. ANDERSON, M.D., Secretary.

PREPARATIONS USED IN THE FEEDING OF INFANTS (*See* Accepted Foods, 1939, p. 156).

Harold H. Clapp, Inc., Rochester, N. Y.

CLAPP'S BRAND CHOPPED CHICKEN SOUP WITH VEGETABLES AND NOODLES, canned chopped mixture of chicken broth, chicken, carrots, noodles, celery, salt and parsley.

Analysis (submitted by manufacturer).—Moisture 91.0%, total solids 9.0%, protein (N × 6.25) 2.1%, ash 1.2%, fat (ether extract), 0.8%, crude fiber 0.1%, carbohydrate (by difference, not including crude fiber) 4.8%, calcium 0.009%, phosphorus 0.013%, iron 0.009%. Vitamins, thiamine 1.02 mg., riboflavin 0.05 mg., ascorbic acid 0.2 mg. per hundred grams.

Calories.—0.35 per gram; 9.9 per avoirdupois ounce.

Harold H. Clapp, Inc., Rochester, N. Y.

CLAPP'S BRAND CHOPPED CREAMED VEGETABLES, creamed chopped mixture of tomatoes, potatoes, carrots, cream, green beans, flour, celery and salt.

Analysis (submitted by manufacturer).—Moisture 89.7%, total solids 10.3%, ash 1.1%, fat (ether extract) 0.6%, protein (N × 6.25) 1.0%, crude fiber 0.2%, carbohydrate other than crude fiber (by difference) 7.4%, calcium 0.009%, phosphorus 0.013%, iron 0.009%. Vitamins, carotene 3,300 U. S. P. units, thiamine 0.04 mg., riboflavin 0.08 mg., ascorbic acid 0.2 mg. per hundred grams.

Calories.—0.39 per gram; 11.1 per ounce.

Harold H. Clapp, Inc., Rochester, N. Y.

CLAPP'S BRAND STRAINED VEGETABLES WITH LAMB AND RICE AND BARLEY, canned strained mixture of lamb broth, potatoes, carrots, lamb, peas, polished rice, celery, barley, salt and onions.

Analysis (submitted by manufacturer).—Moisture 88.0%, total solids 12.0%, ash 1.2%, fat (ether extract) 1.1%, protein (N × 6.25) 1.9%, crude fiber 0.2%, carbohydrate other than crude fiber (by difference) 7.6%, calcium 0.021%, phosphorus 0.021%, iron 0.006%. Vitamins, carotene 900 U. S. P. units, thiamine 0.02 mg., riboflavin 0.09 mg. per hundred grams.

Calories.—0.48 per gram; 13.6 per avoirdupois ounce.

Libby, McNeill and Libby, Chicago.

LIBBY'S BRAND HOMOGENIZED APPLES AND APRICOTS.

Analysis (submitted by manufacturer).—Moisture 86.06%, total solids 13.94%, ash 0.24%, fat 0.06%, protein (N × 6.25) 0.50 %, crude fiber 0.58%, total carbohydrates (other than crude fiber) by difference 12.53%, salt (as sodium chloride) 0.06%, iron (mg. per hundred grams) 1.00%, copper (mg. per hundred grams) 0.24%, calcium (mg. per hundred grams) 10.90%, phosphorus (mg. per hundred grams) 14.90%.

Calories.—0.5 per gram; 14.93 per ounce.

Libby, McNeill & Libby, Chicago.

LIBBY'S BRAND HOMOGENIZED STRING BEANS.

Analysis (submitted by manufacturer).—Moisture 92.90%, total solids 7.10%, ash 1.12%, fat 0.04%, protein 1.28%, crude fiber 0.84%, carbohydrate 3.28%, salt, (as sodium chloride) 0.76%, iron (mg. per hundred grams) 2.13%, copper (mg. per hundred grams) 0.09%, calcium (mg. per hundred grams) 31.00%, phosphorus (mg. per hundred grams) 36.00%.

Calories.—0.18 per gram; 5.27 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, FEBRUARY 5, 1944

CONGRESSES ON MEDICAL EDUCATION AND LICENSURE AND ON INDUSTRIAL HEALTH

For the first time the Congress on Medical Education and Licensure [1] and the Congress on Industrial Health [2] will be held jointly at the Palmer House in Chicago, February 14, 15 and 16. This arrangement will enable those primarily interested in one of the programs to benefit from the other as well, with but little extra investment of time.

Among topics of importance to be discussed are wartime problems of immediate concern in undergraduate and graduate education and the performance of recent graduates in the armed forces. One session will be concerned with postwar adjustments of the medical school program, graduate and postgraduate training, the returning medical officer who has had his advanced training interrupted, the financing of higher education, and the distribution of medical care.

The licensure programs will include a symposium on accelerated medical training and related licensure implications and discussions of recent medical legislation of general importance.

Advancement of medical standards depends largely on proper medical education and improved medical organization. No other group is more aware of this dependence or more willing to contribute toward self improvement than are the physicians in industry. This close relationship between the Congresses on Medical Education and Industrial Health signifies intensification of interest by medical educators in the whole field of preventive medicine and the growing necessity for proper preparation of physicians for modern industrial health activity. If this happy association continues, the year 1944 can be regarded as a milestone in industrial medical progress.

The Congress on Industrial Health will continue its past emphasis on the necessity for teamwork to reduce industrial disability—teamwork between medicine, industry, labor and official agencies. Proposals will also be outlined for maintaining a high level of interest in industrial health and welfare after the stimulus of war production is over. Of great importance during the coming months will be the reestablishment of the disabled as self-supporting social units. A complete description of current rehabilitation programs will be presented. Rehabilitation, workmen's compensation and medicine have much in common, and joint opportunities for better service to the disabled will occupy a prominent place on the program. The employment of large numbers of women in industry has created new medical and health problems which will be the subject of a half-day symposium. Other important contributions include the psychosomatic approach in industry, nutrition, aviation medicine, tuberculosis, chemotherapy, sanitation, health education and industrial ophthalmology. Every physician interested in the orderly and scientific development of medical services for the industrially employed is cordially invited to attend.

1. For complete program see THE JOURNAL, January 29, p. 310.
2. For complete program see THE JOURNAL, January 22, p. 240.

HISTAMINE SPECIFIC ANTIBODIES

An ingenious new technic for the study of the role of histamine in anaphylactic shock and related clinical conditions is recently reported by Fell and his co-workers [1] of the Research and Biological Research Laboratories, Parke, Davis & Co. The original Dale [2] theory of anaphylaxis assumed that a combination of antigen and antibody leads to the explosive liberation of preformed histamine from the sensitized tissues, the dominant symptoms of anaphylaxis being due to this liberated cellular histamine. Clinical evidence has been obtained in recent years [3] both in support and in contraversion of this theory.

Two main methods have been used to study this phenomenon. For example, animals can be rendered slightly refractory to histamine by previous injection of this substance. Certain investigators [4] report that this induced histamine refractoriness reduces the severity of subsequent anaphylactic shock. Other equally competent investigators report negative results. Attempts to neutralize or destroy the hypothetical histamine by prophylactic injection of "histaminase" has also been tried with both positive [5] and negative [6] results.

Since these two methods have thus given inconclusive evidence, Fell and his co-workers adopted a third method: the attempted production of histamine specific antibodies by using histamine as a specific

1. Fell, Norbert; Rodney, Gertrude, and Marshall, Donald E.: J. Immunol. **47**: 237, 251 (Sept.) 1943.
2. Dale, H. H.: Lancet **1**: 1285 (June 22) 1929.
3. Farmer, Laurence: J. Lab. & Clin. Med. **26**: 802 (Feb.) 1941.
4. Farmer, Laurence: J. Immunol. **36**: 37 (Jan.) 1939.
5. Karady, S., and Browne, J. S. L.: J. Immunol. **37**: 463 (Nov.) 1939.
6. Alexander, H. L., and Bottom, Donald: J. Immunol. **39**: 457 (Dec.) 1940.

haptene conjugated with an inert protein carrier. The protein selected for this conjugation was despeciated normal horse serum globulin [7] prepared by partial digestion of normal globulin with taka diastase. In itself the despeciated globulin is practically nonantigenic for guinea pigs. Two conjugates have thus far been prepared: a histamine-azoprotein (Landsteiner technic) and a more complex product obtained by coupling the isocyanate derivative of histamine with the despeciated globulin.

Both conjugates were found to be antigenic for guinea pigs, giving rise to relatively high titer histamine specific precipitins and conferring on the animal a specific insusceptibility to histamine. Guinea pigs thus rendered specifically histamine refractory were subsequently sensitized both actively and passively to crystalline ovalbumin, with an equal number of non-histamine refractory controls. Both series were then injected intravenously with a shocking dose of ovalbumin. In the control series nearly all animals died of lethal anaphylactic shock. Only mild or negative anaphylactic reactions were noted in the histamine resistant animals.

The results of these tests seem to confirm the original theory that the explosive release of histamine by sensitized tissues is a dominant feature of acute anaphylactic shock in this animal species and that immunization with artificial histamine-protein complexes might be a logical prophylactic method in human medicine. A clinical study of histamine-azoprotein prophylaxis has been under way for several years in the University of Michigan,[8] with results "sufficiently encouraging to justify a continuation of the study."

The general technic adopted by Fell and his co-workers has been applied to a study of other pharmacologically active chemical substances. Clutton,[9] for example, immunized rats against thyroxin-globulin conjugates and showed that the resulting immunity would inhibit the metabolic effects of subsequently injected thyroxin. The normal function of endogenous thyroxin, however, was not affected. Epinephrine-azoproteins,[10] acetylsalicylic acid globulin conjugates,[11] strychnine-protein complexes,[12] and organic arsenic compounds coupled with globulin [13] are also successful haptene specific antigens, conferring a distinct degree of serologic immunity against homologous toxic or therapeutic agents.

7. Coghill, R. D.; Fell, Norbert; Creighton, Martha, and Brown, Gordon: J. Immunol. **39**: 207 (Sept.) 1940.
8. Sheldon, J. M.; Fell, Norbert; Johnston, J. H., and Howes, H. A.: J. Allergy **13**: 18 (Nov.) 1941.
9. Clutton, R. F.; Harington, C. R., and Yuill, M. E.: Biochem. J. **32**: 1119 (July) 1938.
10. Went, S., and Kesztyüs, L.: Arch. f. exper. Path. u. Pharmakol. **193**: 609, 1939.
11. Butler, G. C.; Harington, C. R., and Yuill, M. E.: Biochem. J. **34**: 838 (June) 1940.
12. Hooker, S. B., and Boyd, W. C.: J. Immunol. **38**: 479 (June) 1940.
13. Singer, E.: Australian J. Exper. Biol. & M. Sc. **20**: 209 (Sept.) 1942.

PSYCHIATRIC PROBLEMS OF A GERMAN CONCENTRATION CAMP

Bettelheim,[1] a psychologist of repute who has been an inmate of the Dachau and the Buchenwald concentration camps, reports an interesting study of the psychologic effects of "extreme situations" on groups of people. He believes that some of the aims of the Gestapo in establishing concentration camps were to break the prisoners as individual human beings and to change them into docile masses from which individual or group acts of resistance could not arise. It wished to spread terror among the rest of the population by using the prisoners as hostages for good behavior, demonstrating what happens to those who oppose the Nazi rulers. It aims also to provide the Gestapo members with a training ground in which they would be educated to lose all human emotions and attitudes. Thus the Gestapo would learn the most effective ways of breaking resistance in a defenseless civilian population. In other words, the Gestapo is provided with an experimental laboratory in which to study the effective means for breaking civilian resistance. In the process the minimum food, hygienic and medical requirements needed to keep the ability of prisoners to perform hard labor when the threat of punishment takes the place of all other normal incentives is determined as well as the influence on performance of removal of every activity but hard labor in prisoners separated from their families. The author is particularly concerned with the concentration camp as a means of producing changes in the prisoners which will make them more useful subjects of the Nazi state. In analyzing this development Bettelheim recognizes three stages. The first of these centers around the initial shock of finding oneself in unlawful imprisonment. The main event of the second stage is the transportation to the camp and the first experiences in it. This involves often the first tortures which the prisoner has ever experienced. They are, as a rule, physically and psychologically the worst torture to which he will ever be exposed. The final stage is a slow process of changing the prisoner's life and personality. It occurs step by step, continuously. It is the adaptation to the camp situation.

The purpose of the tortures was to break the resistance of the prisoners and to assure the guards that they were really superior to the prisoners. The author's own reaction was to safeguard his ego so that he would be approximately the same person that he was when he was deprived of his liberty if by any good luck he should regain it. The prisoners he interviewed all insisted that the main problem was "to remain alive and unchanged." All the emotional efforts of new prisoners were directed toward this goal. Old prisoners seemed mainly concerned with the problem of how

1. Bettelheim, Bruno: Individual and Mass Behavior in Extreme Situations, J. Abnorm. & Social Psychol. **38**: 417 (Oct.) 1943.

to live as well as possible in the camp. They realized that they had adapted themselves to the life in the camp and that this process was coexistent with a basic change in their personalities. The acceptance of camp life as real never took place before spending two years in camp. Even hatred became subdued in old prisoners. They had forgotten to love their kin, and they had lost the ability to hate the oppressor. They had learned to direct a great amount of aggression against themselves so as not to get into too many conflicts with the Gestapo; the new prisoners still directed their aggressions against the outer world and, when not supervised, against the Gestapo: The longer a prisoner had been in camp the less true to reality were his daydreams. All changes produced by living in the camp seemed to force the prisoners back into childhood attitudes and behaviors, and they became in this way more or less willing tools of the Gestapo.

A prisoner had reached the final stage of adjustment to the camp situation when he had changed his personality so as to accept as his own the values of the Gestapo. Slowly prisoners accepted, as expressions of their verbal aggressions, terms which definitely did not originate in their previous vocabularies but were taken over from the far different vocabulary of the Gestapo. From copying the verbal aggressions of the Gestapo to copying their forms of bodily aggressions was one more step, but it took several years to make this step. The author states that it was not unusual to find old prisoners, when in charge of others, being worse than the Gestapo, in some cases because they were trying to win favor with the Gestapo in this way, but more often because they considered this the best way to behave with prisoners in the camp. Old prisoners who seemed to have a tendency to identify themselves with the Gestapo would try to arrogate to themselves old pieces of Gestapo uniforms. They accepted the Gestapo's goals and values, even when these seemed opposed to their own interests.

More important is the influence of the concentration camp as the main training ground for young Gestapo soldiers who are planning to rule and police Germany and all conquered nations. The prison camp is the Gestapo's laboratory in which are developed methods for changing free and upright citizens into grumbling slaves and serfs who in many respects accept their master's values. What happens in an extreme phase to prisoners who spend several years in the concentration camp happens in less exaggerated form to the inhabitants of the big concentration camp called Greater Germany. This effect, the author stresses, ought to be studied by all persons interested in understanding what happens to a population subject to the methods of the Nazi system.

Bondy [2] also concludes that it is almost impossible for a person to stay in an internment camp for a long time without undergoing radical physical, mental and moral changes. He believes that the internment camps will become an immediate problem after the defeat of the enemy and that methods for dissolving them should be studied now. He suggests (1) a systematic study of the literature on internment camps, (2) systematic interviews with former internees, (3) systematic direct studies of prisoners of war and civil prisoners in internment camps and (4) a special study of German prisoners of war now in this country; this would help to bring to light what needs to be done after Germany is conquered.

2. Bondy, Curt: Problems of Internment Camps, J. Abnorm. & Social Psychol. **38**: 453 (Oct.) 1943.

LAXITY IN WARTIME PHARMACEUTICAL MANUFACTURE

Apparently the circumstances created by the war have produced some relaxation of standards and control procedures established to insure the identity, purity and potency of medicinal materials. In recent months the Chemical Laboratory of the American Medical Association has found serious discrepancies between the labeling and the actual contents of materials submitted by several drug manufacturers. Each instance has been called to the attention of the manufacturer concerned. The public, the physician and the pharmacist depend in large measure on the manufacturer of pharmaceuticals for many finished dosage forms of drugs which, experience has shown, can be provided efficiently by modern mass production methods. Possible loss of life or wasted man-hours of work, resulting from faulty dosage traceable to mislabeling, cannot be tolerated.

The cooperative efforts of physicians, pharmacists and manufacturers of pharmaceuticals have resulted in the adoption and constant improvement of criteria designed to facilitate accuracy in prescribing, dispensing and preparing of drugs. Such criteria are embodied in New and Nonofficial Remedies, in the Pharmacopeia of the United States and in the National Formulary. Ultimate responsibility for marketed dosage forms of drugs, such as ampules, tablets and suppositories, lies with the manufacturer. The physician and the pharmacist must be able to depend on the labeling statements of such products, particularly with regard to potency and identity. The integrity of many manufacturers justifies this trust; if such trust is betrayed there exist punitive legal restrictions. There can be no positive guaranty that error may not occur in the processes involved in the transformation of raw materials into finished medicinal products. Careful control measures and constant vigilance by the manufacturer will minimize dangers inherent in false identity, low purity or wide variation in potency of products employed to maintain or restore health.

The personnel and physical equipment of all manufacturing organizations in the United States are under constant stress. Manufacturers of drugs and medicinals

have not been exempt from the loss of trained workers and from the necessity for full utilization of all available machinery in their tremendous job of providing adequate supplies of medicines for the armed forces and for the public. Nevertheless manufacturers of pharmaceuticals need to scrutinize and steadily improve their methods of product control.

Current Comment

THE SOCIAL SECURITY BOARD

The Annual Report of the Social Security Board was recently sent to the Congress by Mr. Paul V. McNutt, Federal Security Administrator. The Report of the Social Security Board was under the name and authority of Mr. Arthur J. Altmeyer. Some sections of this report are so reminiscent of the "rubber stamp" phrases of the economists and social service workers who have been agitating for government medicine and compulsory sickness insurance since 1932 that one thinks almost immediately of that famous Biblical phrase "The voice is Jacob's voice, but the hands are the hands of Esau." For instance,

> For the individual family, medical costs are unpredictable and largely uncontrollable. In any given year, medical needs will confront some families with economic disaster and others with a burden which can be met only by sacrifices of other essentials, but no one can predict which families these will be.

That language might well be characterized as by Isidore S. Falk out of Michael M. Davis. The report asserts the belief of the Social Security Board that

> comprehensive measures can and should be undertaken to distribute medical costs and assure access to services of hospitals, physicians, laboratories and the like to all who have need of them.

It is suggested that redistribution of existing costs be made through insurance devices

> effected in such a way as to preserve free choice of doctor or hospital and personal relationships between physicians and their patients, to maintain professional leadership, to ensure adequate remuneration—very probably, more nearly adequate than that in customary circumstances—to all practitioners and institutions furnishing medical and health services, and to guarantee the continued independence of nongovernmental hospitals.

This phraseology indicates the effect of medical activities on the thinking of the Social Security Board, but the only answer of the board evidently is still compulsory sickness insurance. The direct relationship between Mr. I. S. Falk and the proposals of the Wagner-Murray-Dingell bill makes clear how far the proposed legislation misses in attaining the fundamental principles that are considered necessary by the medical profession in maintaining the quality of medical service. The concluding sentence of the section of the report which deals with medicine is as follows: "The Social Security Board believes that provisions for health and medical care have an important place in any comprehensive and adequate program of social security."

HEAD INJURIES IN CHILDREN

The highly sensitive cortical cells and psychic constitution of the child are most important in determining the higher incidence of a number of pathologic conditions following head injuries at this age, chiefly abnormal behavior, psychopathic personality and convulsive seizures. These factors were analyzed by Gutmann and Horder[1] in a group of 66 children, The effects of head injuries in this group were compared to those occurring in a group of adults. The degree and intensity of disturbances immediately following the trauma were mainly dependent on the severity of the craniocerebral lesions. Fractures of the skull were present in 43.3 per cent of the children or about twice as frequently as among adults. The same percentage of patients exhibited definite signs of neurologic involvement including various conditions from abnormalities of tendon reflexes to the development of convulsive spells. The incidence of convulsions a few hours after the accident was also higher among children. Unconsciousness or post-traumatic amnesia was present in 38 patients. During the recovery of consciousness emotional symptoms were predominant, but they disappeared rather suddenly. The mental and physical incapacity produced by head injuries was shorter than is generally believed. If a few instances of relatively rare complications are disregarded, the average time of absence from school was only four weeks. Also in contrast to the general belief, the incidence of late sequelae of head injury was minimal. In almost every instance of neurotic syndromes, irritability, psychic disturbances and pathologic behavior, close analysis showed that evidence of abnormal psychic constitution existed prior to the accident. Environmental factors and previous history of conduct should be carefully examined before attributing to traumatic injuries responsibility for deterioration of character in children.

LIBERTY SHIP NAMED FOR NATHAN SMITH DAVIS

As a salute to the contribution of the American medical profession to the war, a war-cargo ship—a so-called liberty ship—was launched Thursday, January 27, at Shipyard No. 2 of the Permanente Metals Corporation of Richmond, Calif., one of the Henry Kaiser interests. The vessel was christened the *Nathan S. Davis* in honor of the founder of the American Medical Association. In 1947 the American Medical Association will celebrate the 100th anniversary of its founding. The Board of Trustees of the Association has under consideration the celebration of this important event in a suitable manner. The dedication of this vessel in honor of Nathan Smith Davis and another in honor of Frederick Banting may be taken as indications of the appreciation of the American people of the great contribution that medicine has made not only to the war but also to the standards of health and medical education in the United States.

1. Gutmann, E., and Horder, H.: Head Injuries in Children and Their After-Effects, Arch. Dis. Childhood **18**: 139 (Sept.) 1943.

YOUTH PROBLEMS ON THE AIR

The National Broadcasting Company, in cooperation with ten national organizations [1] representing the interests of American youth, is broadcasting a series of thirteen programs entitled "Here's to Youth." The program is on the air for thirteen weeks beginning Saturday January 15 from 7 to 7:30 p. m. Eastern war time (6 to 6:30 Central war time, 5 to 5:30 Mountain war time, 4 to 4:30 Pacific war time). It is a professionally written, fast moving dramatic series with sound effects and music, combining entertainment and, in the best sense of the word, propaganda. The purpose of the program is to dramatize the problems and difficulties of youth in a scrambled wartime economy and to point out ways for the solution of these problems. The first script was an introductory one in which American youth is introduced in contrast to Nazi youth. The participating organizations are identified and there is a dramatization having to do with the difficulties of finding a place to play because wartime necessities have taken over the diamonds in vacant lots, destroyed or put out of bounds the old fishing hole and otherwise created situations which faced young persons with the alternative of boredom or of activities which would do them no good. The second script dealt with the social isolation of trailer town folks who are not floaters and who had been substantial citizens in more settled communities. This would seem to be an American approach to a difficult problem. Instead of running to Washington with outstretched palm and demanding that the government appropriate millions and establish another federal bureau, the youth agencies concerned, together with the National Broadcasting Company, are trying to mobilize communities for local cooperation and are showing in each script exactly how it can be done. This is an example of community cooperation by which wartime problems can be solved if there is a solution. It is a splendid suggestion to postwar planners that the American spirit of enterprise is not dead and that it does not need to center in the nation's capital.

THE HANDBOOK OF NUTRITION

The long awaited Handbook of Nutrition,[1] published under the auspices of the Council on Foods and Nutrition of the American Medical Association, has just become available. As was announced when the first articles appeared in THE JOURNAL in 1942, all the articles have been brought together and revised and are now published in book form. The contents include such subjects as the fundamentals of modern nutrition, the essential elements in the diet, their sources in naturally occurring foods and methods by which the greatest benefit may be derived from the consumption of cheap staple foods. Special attention is given to the dietary needs of special groups of the population. The book is invaluable as a reference for those in the field of nutrition and exceedingly useful to the physician who wishes to apply modern knowledge of nutrition in his practice.

1. Girl Scouts, Boy Scouts, Boys Club of America, Camp Fire Girls, National Catholic Welfare Conference, National Federation of Settlements, Y. M. C. A., Y. W. C. A., American Junior Red Cross, National Jewish Welfare Board.

1. Handbook of Nutrition: A Symposium Prepared under the Auspices of the Council on Foods and Nutrition of the American Medical Association. Reprinted from The Journal of the American Medical Association with Additions. Cloth. Price, $2.50. Pp. 586. Chicago, American Medical Association, 1943.

THE COMMONWEALTH FUND

The report of the Commonwealth Fund for 1943 contains a review of its contributions for a period of twenty-five years, since its origin on Oct. 17, 1918. During those twenty-five years over $41,000,000 has been appropriated to various projects by this foundation. Its first grant was for war service; during its first five years nearly half of its total appropriations were for war service and overseas relief. Among the chief fields of its interest have been the prevention of juvenile delinquency and the betterment of child health, also mental hygiene. However, medical research and public health have taken a majority of the funds. In his review of a quarter century of giving, Barry C. Smith, general director of the Commonwealth Fund, speaks frankly. After telling of a series of demonstrations of child health services as part of the local public health program and indicating that they served to broaden current concepts of public health, he says that, on the whole, they were disappointing as instruments for improving public health service. Efforts to raise the standard of public health services have been most successful by cooperation with state health departments in areas in which the county is the normal unit of public health services and less successful in other areas. Especially important has been the work of this fund in developing rural hospital facilities. Fourteen small community hospitals now in operation typify the results of this contribution. Much money has been given to medical education, with special emphasis on graduate education in the field of medicine. About $16,000,000 has been given during the past quarter century for the support of health service as related to the work of the physician, the health department and the hospital. Much additional money has been spent on medical research, with special reference to cardiorenal physiology and disease, but a great variety of projects have been included and numerous fellowships have been provided to British and Latin American students. The review closes with a most careful philosophic consideration by Mr. Barry Smith of the difficulties of spending money wisely in service to mankind. The short term project has an advantage that it can be abandoned if it seems to fail to meet its objectives, but it is vulnerable because those working under such projects may not make positive commitments of time or service. The long term project with fixed objectives allows adjustments but sooner or later becomes dated or arbitrary; "there is a temptation to fit situations to the program instead of the program to the situation." Indeed, one of the chief advantages in the spending of the funds has been the professional development of carefully selected individuals who themselves help to create new social programs of the future or to build up the knowledge on which future programs will be based.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

ARMY

AVIATION MEDICAL EXAMINERS

Graduating exercises were held at the School of Aviation Medicine, Randolph Field, Texas, on January 6 following completion of the course for aviation medical examiners. The list of medical corps students graduating follows:

ALABAMA

Chalmers D. Collins, Major, Birmingham.
Saul Krugman, Captain, Selma.

ARIZONA

Marvin C. Schlecte, Major, Tucson.

ARKANSAS

James B. Kittrell, Captain, Texarkana.

CALIFORNIA

Franklin I. Ball, Major, Los Angeles (North Hollywood).
Laurence H. Dorcy, Major, San Francisco.
David D. Holaday, Captain, San Francisco.
Samuel A. Jones, Captain, Los Angeles.
Paul McChesney, Captain, Berkeley.
Emerson L. Meyer, Captain, Healdsburg.

COLORADO

William C. Beaver, Captain, Pueblo.

FLORIDA

Jack O. Cleveland, Captain, Coral Gables.
Edwin P. Preston, Major, Miami Beach.
William B. Wilkins, Captain, Palm Beach.

GEORGIA

Allen W. Coward, Captain, Macon.

ILLINOIS

William L. DeRenne, Captain, Chicago.
Harold Feldman, Captain, Pekin.
Roy R. Grinker, Lieut. Col., Chicago.
Weston W. Jones, Captain, Evanston.
Edward W. Kallal, Captain, Chicago.
Philip H. Ross, Captain, Chicago.
Leland M. Stilwell, Captain, Champaign.

INDIANA

Matthew Cornacchione, Major, Indianapolis.
John M. Paris Jr., Captain, Indianapolis.
Robert C. Peacock, 1st Lieut., Dunkirk.

IOWA

Asa S. Arent, Captain, Humboldt.
Walker B. Henderson, Lieut. Col., Oelwein.
John E. Kimball Jr., Captain, West Liberty.
Norman E. Zahrt, Captain, Iowa City.

KANSAS

Edgar P. Sereres, Captain, Kansas City.

KENTUCKY

Charles E. Work, Major, Fort Thomas.

LOUISIANA

Floyd N. Beckcom, Captain, Shreveport.
Eric E. Guilbeau Jr., Captain, Lafayette.
Frederick A. Marx, Captain, New Orleans.
John P. Michaels, Captain, New Orleans.
Paul W. Winder, Major, Shreveport.

MASSACHUSETTS

Ira M. Dixson, Major, Stockbridge.
Frank J. Jordan Jr., Captain, Stoughton.
Paul L. Magnuson, Captain, New Bedford.
Frank M. O'Connor, 1st Lieut., Newton.
Herbert F. R. Plass, Captain, Boston.
Thomas A. Warthin, Captain, Boston.

MICHIGAN

Nelson A. C. Andrews, Captain, Flushing.
Clifford W. Colwell, Major, Flint.
George Christian Frederickson, Captain, Detroit.
William Haeck, Captain, Grand Rapids.
Arthur B. Thompson, 1st Lieut., Saginaw.
Jack V. Turnbull, Captain, Detroit.
Kenneth P. Wolfe, Captain, Alma.

MINNESOTA

Russell G. Barnes Jr., 1st Lieut., Hastings.
Asher S. Chapman, Captain, Rochester.

MISSISSIPPI

Donald S. Hall, Captain, Vicksburg.

MISSOURI

Robert W. Elliott, Captain, St. Louis.
Caldwell K. Hamilton, Captain, Kirkwood.

NEBRASKA

Charles J. Green, Major, Omaha.

NEW HAMPSHIRE

Kenneth J. Daly, Major, Manchester.
Philip L. Dunkle, Captain, Hebron.
Thomas F. Foley, Captain, Manchester.

NEW JERSEY

Anthony V. Chase, Captain, New Brunswick.
Vincent Feliciano, Captain, Hawthorne.
Harry E. Fridrich, Captain, Camden (Merchantville).
Edward J. Gonczy, Captain, Elizabeth.
Paul V. Reinartz, Captain, Newark (Bloomfield).

NEW MEXICO

Wendell H. Peacock, Major, Farmington.

NEW YORK

Vincent F. Amar, Captain, Rockland Lake.
Ardow Ameduri, Captain, New York.
Richard B. Baker, Captain, New York.
Robert R. Cadmus, Captain, New York.
John A. Canning, Captain, Brooklyn.
Milford N. Childs, Major, Buffalo.
Eugene S. Coler, Lieut. Col., New York.
Maxwell H. Dale, Captain, New York.
Barnet Delson, Captain, Brooklyn.
Edwin H. Douglass Jr., Captain, Newburgh.
Max Eisenstat, Major, New York.
Carl M. Epstein, Captain, New York.
Francis H. Fox, Captain, Brooklyn.
William L. Hartmann, Captain, New York.
Abraham I. Levine, Captain, Brooklyn.
Jay G. Linn Jr., 1st Lieut., New York.
Lloyd J. Nelson, Captain, Queens Village.
Robert W. Ollayos, 1st Lieut., New York.
Joseph F. Palmieri, Captain, Brooklyn.
Robert C. Peale, Captain, Olean.
Harmon T. Rhoads Jr., Captain, New York.
Milton Robbins, Captain, Brooklyn.
Jeremiah E. Ryan, 1st Lieut., Binghamton.
Allan W. Siegner, Captain, Buffalo.
Barnett Soloyioff, 1st Lieut., New York.
Isaac Terr, Captain, Woodmere.

NORTH CAROLINA

Richard W. Bunn, Captain, Winston-Salem.

OHIO

Carl T. Doeing, Major, Springfield.
David C. Frick, Major, Toledo.
Gilbert E. Garvin, Captain, Blanchester.
Edward F. Hellwig, Captain, Cleveland.
Benjamin F. Mowry, Major, Findlay.
Benjamin F. Sawyer IV, Captain, North Star.
Merl B. Smith, Captain, Toledo.
George M. Wilcoxon, Captain, Alliance.

OKLAHOMA

Linus A. Munding, Captain, Tulsa.

OREGON

Palmer R. Grorud, Captain, Portland.

PENNSYLVANIA

John J. DeTuerk, Captain, Erie.
Chester J. Ginieczki, 1st Lieut., Philadelphia.
Eugene M. Hartnett, 1st Lieut., Philadelphia.
Romuald J. Krajeski, Captain, Wilkes-Barre.
John Kulczycki Jr., Major, Scranton.
George S. Pettis, Captain, Reading.
Irving A. Rush, Major, Philadelphia.
Francis Schumann, 1st Lieut., Philadelphia.
Arthur I. Sims, Captain, Philadelphia.
Morgan F. Taylor, Captain, Hop Bottom.
Harvey G. Wible, Major, Pittsburgh.

SOUTH CAROLINA

Harold M. Allison, Major, Greenville.

TENNESSEE

Jesse F. Scott, Captain, Nashville.

TEXAS

Joe W. Dickerson, Captain, Jaster.
Joe T. Gilbert, Major, Austin.
Arthur E. Moers, 1st Lieut., Fort Worth.
James J. Muirhead, Captain, Vernon.
Samuel Schwartzberg, Captain, San Antonio.
Lewis K. Tester, Major, San Angelo.

WASHINGTON

Oscar W. Anderson, Captain, Seattle.
William Y. Baker, Captain, Seattle.
Clyde W. Countryman, Lieut. Col., Spokane.

WEST VIRGINIA

Robert M. Lamb, Captain, Winona.

WISCONSIN

Carl S. Williamson, Colonel, Green Bay.

In addition there were 4 graduates of the Medical Corps of the Chinese army and 1 of the Argentine army, which are as follows:

Tsuyung Chen (Chinese army), Captain.
Sikung Liu (Chinese army), Captain.
Shaolin Sieh (Chinese army), Captain.
Yung Ching Tai (Chinese army), Captain.
Raul Marty (Argentine army), 1st Lieut., Buenos Aires.

GRADUATE MEDICAL ADMINISTRATIVE OFFICERS

The twenty-ninth class of the Camp Barkeley Medical Administrative Corps Officer Candidate School graduated on January 12 following a sixteen weeks course of training and instruction on subjects that included medical administration, supply, army organization, sanitation, first aid, chemical warfare, tactics, logistics and training. Special stress was put on the development of leadership and physical stamina. Certificates of graduation and letters of commission were presented to the new officers by Brig. Gen. Roy C. Heflebower, school commandant.

KANSAS CITY (MO.) HOSPITAL UNIT IN ENGLAND

Lieut. Col. Edward Hashinger, now home on leave for a new assignment, returned to Kansas City, Mo., from overseas, where he was chief of medicine and executive officer of the University of Kansas evacuation unit. In reporting on the unit, Colonel Hashinger stated that during its eighteen months overseas the outfit served throughout the Tunisian campaign from the landing at Oran and handled thousands of battle casualties. He paid special commendation to the nursing staff, of which Miss Bessie Walker, formerly of St. Luke's Hospital, Kansas City, Mo., is the chief. During the invasion of Sicily a number of the younger officers and enlisted men were assigned temporarily to the Navy to serve on landing barges. They were given citations by the Navy for meritorious service in the landings at Gela and Licata. Each member of the unit wears three campaign stars on the European theater ribbon, one for invasion and one for the South Tunisian and another for the Sicilian campaign. In Sicily the unit functioned as a hospital, handling medical cases such as malaria in the rear. They had no casualties other than a few patients with malaria, who quickly recovered, although there were more than forty air raids in the vicinity of the evacuation hospital unit. At the conclusion of the Sicilian invasion the unit was transferred to England, where it is at present. The unit consists of approximately 50 medical officers, 50 nurses and 300 enlisted men. Practically all the personnel are from Kansas City or the immediate territory, and many officers are from the University of Kansas hospital staff. Major Tony G. Dillon of Kansas City is now the executive officer of the unit.

ARMY NURSE AND ARMY DIETITIAN TELL THEIR EXPERIENCES ABOARD "SEMINOLE"

The War Department recently disclosed the experiences of Lieut. Margaret Jennings, Army Nurse Corps, formerly of Spring Lake, N. J., and Lieut. Lois Thomas, army dietitian, formerly of Syracuse, N. Y., during their six months service aboard the army hospital ship *Seminole*. Lieutenant Jennings related that the *Seminole* had been blacked out to await the arrival of patients from the shore hospital at Naples when the first of twenty-five Nazi bombers roared overhead. "As we were blacked out, they had no way of telling that we were a hospital ship and I suppose they mistook us for a troop transport. In any case, they gave us the works!" Although the raid lasted a long sixty minutes, there were no casualties aboard the *Seminole*.

Another experience which the officers related was that of an enemy submarine which rose to periscope depth during a burial ceremony aboard the hospital ship and kept the ship under observation until the ceremony was concluded. The U boat withdrew at the approach of a merchant convoy, which it attacked. During the cruise to Naples the ship rescued two British and four American fliers from the sea. Lieutenant Jennings and Lieutenant Thomas were high in their praise of hospital installations in combat areas, which send patients to such ships as the *Seminole* in wonderful condition.

IMPLICATIONS OF WAIVERS FOR KNOWN PHYSICAL DEFECTS

The Office of the Judge Advocate General of the Army recently gave his opinion concerning the implications of waivers for known physical defects which physicians sign on being appointed for limited service in the Army Medical Corps. The opinion, which was released by the Procurement and Assignment Service of the War Manpower Commission, is as follows:

"Response is made to your oral inquiry whether acknowledgment, on the accompanying form, of existing physical defects would preclude a person from thereafter claiming benefits to which he would otherwise be entitled on account of the service connected aggravation of such defects. As to the defects acknowledged, the execution of such an instrument merely provides additional evidence of their existence and to that extent would operate to preclude the person involved from thereafter claiming benefits on account of them. It is the opinion of this office, however, that the mentioned form does not purport to be a waiver of possible future benefits to which the individual might become entitled by reason of any service connected aggravation of such defects and would not operate to deprive the individual of any possible benefits on account of such aggravation."

U. S. ARMY HOSPITAL SHIP "CHATEAU THIERRY"

The United States Army transport *Chateau Thierry* was designated as a United States Army hospital ship on Nov. 29, 1943 in accordance with international practice as set forth in the provisions of the Hague Convention X of 1907. In the future the United States Army hospital ship *Chateau Thierry* will be operated in accordance with the provisions of applicable treaties. Notification of this designation was delivered, through channels, to the Rumanian government on Dec. 10, 1943, to the Bulgarian, Hungarian and German governments on Dec. 11, 1943 and to the Japanese and Thai governments on Dec. 13, 1943. The ship's master of this and all other United States military hospital ships will at all times maintain sufficient copies of this general order for presentation to any authorized agent of an enemy belligerent who may require it for inspection.

PROCUREMENT OF NURSES FOR MILITARY SERVICES

On January 8 the War Department officially notified the Directing Board of Procurement and Assignment Service that appointments to the Army Nurse Corps will be curtailed after 3,500 nurses needed early in 1944 have been procured. Thereafter only replacements will be needed. The Navy still needs nurses at the previously established rate of 500 nurses per month, but military needs may change rapidly with the course of the war. If such change occurs, the state committees will be advised at once.

Quotas soon to be released will place the major burden of procurement of nurses for military duty on those states which have supplied less than their share of nurses. But all state and local committees, as quotas are met, should direct activities more toward civilian needs for essential nursing services. A program for such activities will be released shortly; meanwhile, organization of additional local committees needed should be expedited and all efforts should be made to strengthen existing committees for the important and continuous task ahead.

FIFTY SOLDIERS VOLUNTEER FOR ATABRINE EXPERIMENT

The Armored Medical Research Laboratory at Camp Knox, Kentucky, has been carrying on experimentation to learn whether the level of atabrine concentration in the blood is lowered by excessive perspiring and to discover the loss in weight due to perspiring. The experiment was carried on with the voluntary aid of 50 soldiers, who were praised by the Surgeons General of the American and British armies during their recent inspection tour at Fort Knox. Atabrine has a dye property that turns the taker of it to a temporary rich yellow hue. The experiment revealed that the full strength of the suppressive remains and that only the water in the system evaporates. The weight loss is determined accurately by measurements made at stated intervals.

ARMY PERSONAL

In a recent news dispatch from "Somewhere in New Guinea" Capt. Charles P. Wickard of Little Rock, Ark., was credited with having administered first aid to the wounded men brought from the shores of Arawe, the allied invasion bridgehead on New Britain Island. Dr. Wickard swam among the battered rubber invasion boats, saw to it that they kept in the boats, and administered morphine to the suffering soldiers. Dr. Wickard graduated from the University of Arkansas School of Medicine, Little Rock, in 1939 and entered the service Oct. 21, 1942.

CIVILIAN DEFENSE

REALINEMENT OF EMERGENCY MEDICAL SERVICE, RESCUE SERVICE AND GAS PROTECTION UNITS

The Office of Civilian Defense recently issued a circular letter concerning the realinement of emergency medical service, rescue service and gas protection units, which will assist local commanders of Citizens Defense Corps and local chiefs of Emergency Medical Service, chiefs of Rescue Service and senior gas officers in making such readjustments in noncritical areas as may be needed in connection with the policies presented in Operations Letter No. 147.

After determining the war connected hazards to which the community is exposed, the Citizens Defense Corps may be adjusted. Members no longer needed for active service may be transferred to other appropriate units or placed in inactive status. Wherever adjustments are indicated, the Emergency Medical, Rescue and Gas Protection forces should be maintained at least at the minimum strength as indicated:

I. EMERGENCY MEDICAL SERVICE

1. In all parts of the country:

(a) Maintain Casualty Receiving Hospital mobilization plans and civilian defense ambulance services at present levels;

(b) Retain mobile medical teams and casualty stations located at or based on hospitals and reduce the number of other mobile medical teams and casualty stations on the basis of estimate of risk from war connected or other disasters;

(c) Reduce stretcher teams to the number required at hospitals and those casualty stations which are to be continued;

(d) Retain all volunteer nurses' aides on active status and continue to recruit and enroll as trained; and

(e) Develop non-air raid alerting mechanism.

2. Outside the Atlantic and Pacific coastal areas:

(a) The field and mobile elements (except ambulances) may be adjusted to the strength indicated:

(1) *Urban Centers.*—Mobile medical teams at hospitals: One per 25,000 in larger cities and not less than two per community in cities of 25,000 population or under, if possible.

Casualty stations: One per 50,000 (by consolidating equipment) or one per community of less than 50,000 population, if possible, except that no casualty station should be discontinued if needed because of proximity to war connected industrial hazard.

Staff casualty stations in time of need by mobile medical teams from hospitals, if possible.

(2) *Rural Areas.*—Chief of Emergency Medical Service, nurse deputy, medical property officer and 1 mobile medical team. The chief of Emergency Medical Service should maintain a plan for mobilization of medical and related personnel and facilities in time of disaster, maintain active contact with chief of Emergency Medical Service of nearest city with hospital facilities, and direct medical operations in any local disaster.

3. Non-air raid alerting mechanism: A non-air raid mobilization plan should be developed and rehearsed in order to make the Emergency Medical Service immediately available in event of any major wartime catastrophe due to sabotage, industrial or railroad accident, fallen plane, explosion, fire, flood, hurricane or other disaster. Such a plan would come into operation on notification of the twenty-four hour emergency control point discussed in Circular, Protection Series No. 33.

(a) As provided therein telephone numbers of this central control point should be known to the community at large and particularly to the police and fire departments, local industries, utilities and transportation officials.

(b) It may be located at the local control center if provided with twenty-four hour coverage or at a police or fire headquarters, hospital or other place with adequate communication facilities and twenty-four hour coverage by responsible persons.

(c) The "automatic response" when this control point is notified of casualties consists of:

(1) Notification of control center if control point is not located therein;

(2) Immediate dispatch of one mobile medical team and one ambulance from hospital or depot nearest to the scene of disaster if casualties are reported;

(3) Notification of chiefs of services depending on nature of emergency.

(d) On notification to the chief of Emergency Medical Service, he will assume full responsibility for:

(1) Dispatching of additional mobile medical teams, ambulances and sitting case cars;

(2) Alerting of hospitals to put in motion emergency preparations for reception of casualties;

(3) Opening and staffing casualty stations near scene of disaster;

(4) Supplying adequate plasma and other medical supplies and equipment at points of need, obtaining necessary assistance from neighboring communities or the state Emergency Medical Service;

(5) Providing to hospitals necessary additional volunteer personnel;

(6) Directing flow of patients to hospitals in community or to hospitals of other communities;

(7) Providing for immediate care of the dead.

II. GAS PROTECTION

1. In the Atlantic and Pacific coastal areas the Gas Protection forces (senior gas officer and assistants, gas reconnaissance unit and decontamination unit) should be maintained at full strength. (See Operations Letters Nos. 91 and 194, dated Nov. 14, 1942 and Jan. 11, 1943.)

2. In all other parts of the country the Gas Protection forces may be reduced to the following personnel:

(a) *Urban Centers.*—Senior gas officer assistants. One gas reconnaissance agent per 25,000 population.

(b) *Rural Areas.*—None.

III. RESCUE SERVICE

1. In the Atlantic and Pacific coastal areas and in major industrial centers the rescue service should be brought up to the strength recommended in Operations Letter No. 133, dated June 24, 1943.

2. In other parts of the country the rescue service should be maintained or brought up to the following active strength:

(a) *Urban Center.*—Chief of rescue service;

Rescue Squads: One per 100,000 persons in large cities and not less than two per community where population is less than 100,000, if possible;

Rescue Depots: One per 200,000 persons or one per community where population is less than 200,000, if possible.

It is recommended that the rescue service in these communities be developed within an agency of local government (e. g. fire, public works, police) or within local industry, and that squads be composed largely or wholly of employees.

(b) *Rural Areas.*—None.

Commanders of local Citizens Defense Corps should be responsible for obtaining rescue services from nearest city through mutual aid.

NAVY

NAMÉ ESCORT VESSELS FOR DECEASED NAVY HEROES

Three destroyer escort vessels are to be named for a deceased member of the Navy Medical Corps and two members of the Hospital Corps. The D. E. 590 *Ringness* is to be named in honor of Lieut. Henry R. Ringness, Medical Corps, U. S. Navy, Washington, D. C., who was awarded the Navy Cross posthumously (THE JOURNAL, Sept. 25, 1943, p. 219). The D. E. 707 *Jobb* is to be named in honor of Richard P. Jobb, pharmacist's mate third class, U.S.N.R. (Moclips, Wash.), and the D. E. 721 *Don A. Woods* is to be named for Don A. Woods, hospital apprentice first class, U.S.N. (Wymore, Neb.), both of whom were awarded the Silver Star Medal posthumously.

NURSE CORPS

According to the Bureau of Medicine and Surgery, Washington, D. C., Dr. Charles Nelson Leach, formerly of Montgomery, Ala., and recently repatriated, brought a report on the eleven navy nurses now prisoners of war in the Philippines. Severe military necessity forced the navy nurses and navy patients into the Manila area. Later on they assisted Dr. Leach in the care of the internees. When Santo Tomas became overcrowded the Japanese opened a new camp at Los Banos, about 40 miles from Manila. Dr. Leach and three other doctors were selected for this new development. Dr. Leach persuaded the Japanese to allow the eleven navy nurses to go to Los Banos, since by that time the nursing facilities at Santo Tomas had been augmented by the arrival of army nurses from the various army hospitals in the Philippines. Dr. Leach reports that the contribution of the navy nurses to the care of the internees and the unfailing quality of their high morale has been invaluable in a situation imposed by the war.

FIRST AIR MEDAL AWARDED TO MEDICAL CORPS OFFICER

Lieut. William W. Evans, formerly of New Rochelle, N. Y., is the first Navy medical officer to receive the Air Medal, a decoration which is awarded to military personnel who distinguish themselves in aerial flight, either in combat or in noncombat action. The citation accompanying the award was as follows:

"For meritorious achievement while participating in aerial flight as Squadron Flight Surgeon while attached to a Marine Aircraft Group in the Solomon Islands Area from Oct. 15, 1942 to June 26, 1943. Volunteering for extremely hazardous flights deep into enemy territory to administer aid to wounded pilots and study combat strain, Lieutenant Evans also participated in numerous dangerous missions for the purpose of maintaining the physical fitness and morale of his assigned pilots at a high level. During the violent defense on Guadalcanal Island in November 1942 he was responsible for the badly needed improvements made in the housing and preparation of supplies for pilot's mess, laboring tirelessly to improve their living conditions. Lieutenant Evans's courageous devotion to duty throughout his three tours of duty was in keeping with the highest traditions of the United States Naval Service."

Dr. Evans graduated from the University of Pennsylvania School of Medicine in 1938 and entered the Navy in March 1942.

MISCELLANEOUS

RESIDENT AND INTERN QUOTAS FOR HOSPITALS, 1944-1945

The Procurement and Assignment Service is now setting quotas for hospital intern and resident staffs for 1944-1945. Any hospital which has had significant changes in patient load during the past year is urged to submit immediately to the Procurement and Assignment Service Central Office a report covering average daily census, births, inpatient admissions, exclusive of births, and outpatient visits for 1943. No questionnaire is being sent to hospitals for this purpose. However, it is in the interest of the hospital to send in such data, since it will be considered by the hospital subcommittee charged with setting quotas.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quotas allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, January 29, p. 304)

NEBRASKA

Lincoln General Hospital, Lincoln. Capacity, 203; admissions, 4,262. Robert B. Witham, Administrator (interns).

NEW YORK

Unity Hospital, Brooklyn. Capacity, 283; admissions, 5,585. Peter S. Berlind, Executive Secretary (3 interns—April).

Memorial Hospital for Cancer and Allied Diseases, New York City. Capacity 213; admissions, 5,029. Mr. George F. Holmes, Superintendent (3 assistant residents).

ROYAL ARMY AIR CORPS OFFICER FIRST TO USE PENICILLIN

Lieut. Col. Ian Fraser, Royal Army Medical Corps officer, who was the first one to use penicillin in the front line, has been awarded the D.S.O. for doing so under heavy enemy fire on the Sicilian beaches. The citation recorded that he used technic novel to war surgery and "established new and most valuable wound treatment." For forty-eight hours he remained ashore under shellfire and divebombing and then, before returning to his hospital ship, gave a pint of his blood to save the life of a gravely wounded man.

HEALTH UNDER HITLER

According to *Le Petit Dauphinois* of November 9 (France) the medical inspector of the Haute-Savoie announces that the distribution of insulin has been further reduced. Patients, hospitals and doctors are earnestly requested to abstain from keeping stocks of insulin. Negotiations are now in progress with foreign countries which should if successful make it possible to buy a sufficient quantity of insulin to improve the distribution within a few weeks.

Svart pa Hvitt of October 7 (Norway) states that the elaborately produced book Für ein Grossgermanien was recently produced in Oslo and immediately sent in quantities to Germany. The book had been prepared by Rediess himself. It deals with German "child production" in Norway. Pictures of the various sanatoriums where Norwegian women and girls can go to have their German fathered children propagandized the comfortable conditions in which such happy events take place. According to Rediess, up to Dec. 15, 1942, 2,514 children were born in Norway with German fathers.

According to the *Tribune de Genève* of Nov. 5, 1943 it is reported from Paris that the food situation is deteriorating and is causing grave anxiety regarding the winter. Meat has been totally lacking for several weeks. Restaurants have been forbidden to serve meat under any form, because, while the consumers could not get meat at the butchers in exchange for their coupons, all the luxury restaurants had plenty. The restaurants are now under the control of the occupation authorities, presumably on account of the danger that the people, exasperated by unjust distribution (due to powerless officialdom), might grow violent. Uniformed Germans suddenly enter restaurants at mealtime inspecting not only the meal served but also the contents of the cellars and ice boxes.

ORGANIZATION SECTION

MEDICAL SERVICE PLANS

A REPORT FROM THE BUREAU OF MEDICAL ECONOMICS

Significant changes in the prepayment plans endorsed or supervised by state and county medical societies have made necessary a report of developments since the publication by the Bureau of Medical Economics early in 1943 of the report on "Medical Service Plans." That report described the form of organization, types of contracts and some phases of administration which existed at the time it was written. These details are not repeated in the surveys which follow.

One generalization seems safe concerning these plans—all show an increase in membership during the past year. It appears now that most of the plans are on a sound financial basis, having overcome the mistakes and difficulties which arose during their formative period and having profited by the exchange of information with other similar organizations. While numerous minor alterations in the details of contracts with subscribers and physicians have been made, it now appears that the basic features of the plans have been determined and that future changes will be in the nature of detailed improvements in service and administration.

Nearly all the plans are now supplying a surgical service only in connection with hospital care, although some are extending a more general medical service in relation to special groups. Several plans are considering the possibility of such an extension of service but are delaying action pending further experience to determine actuarial conditions. The plans in North Carolina are operated by hospital associations with separate contracts for medical or surgical service which have been approved by the state medical association.

The statements made in this study are based on the reports of the administrators of the several plans or of officials of the medical societies concerned or from official medical journals of such medical societies. No information was obtained from the medical service plans in the states of Oregon and Washington, although requests for such information were sent repeatedly to the officials of the state medical societies of those states.

In other areas developments in the field of medical service plans have not progressed beyond the stage of preliminary study, experimentation, the passage of a state enabling act or other preliminary preparation necessary to an orderly development. The developments in this field are shown graphically in a report prepared this week for the readers of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and all others interested in this subject.

CALIFORNIA PHYSICIANS' SERVICE

SAN FRANCISCO

A. E. LARSEN, M.D., Medical Director

California Physicians' Service in November 1943 had a beneficiary membership of 87,670.[1] Of these there were 51,550 "commercial members" representing those enrolled directly in the service. The Rural Health Program included 5,000 and is conducted in cooperation with the Farm Security Administration. This program "has now small units covering some nineteen counties and is a starting nucleus for further development in these programs, which are covering the great majority of the agricultural areas in the state." War housing projects have approximately 31,120 clients. The experimental character of these projects has necessitated several changes in the financial arrangements and in some other respects but are now reported to be proceeding satisfactorily. After passing through some financial crises, the entire plan had a unit stabilization fund of $39,299 at the close of September 1943.

The Executive Committee of the California Medical Association authorized a survey of the California Physicians' Service by John R. Mannix, director of the Michigan Hospital Service. His report, published in *California and Western Medicine* in November 1943, discusses the reasons for the apparently slow growth in membership and recommends a number of actions to be taken. The Council of the California Medical Association has approved most of these recommendations and has voted to employ a full time executive secretary for sufficient time to develop the proposed changes.

1. California & West. Med. **59**: 347 (Dec.) 1943.

COLORADO MEDICAL SERVICE, INC.

DENVER

WILLIAM S. MCNARY, Executive Director

A report of Oct. 31, 1943 showed 4,108 active contracts of enrolment covering seventy groups and 10,089 subscribers. A reserve of $2,795.66 had been accumulated during the previous eighteen months, which covered the period since organization. During this period $33,858.25 had been received from subscribers and $27,977.17 paid in fees to participating physicians.

The Denver County Medical Society has approved a plan for enrolment of groups without income limits, the individuals receiving service who are above the previous limits to be paid on an indemnity basis.

GROUP HOSPITAL SERVICE, INC.

WILMINGTON, DEL.

H. V. MAYBEE, Managing Director

The independent surgical contract has been abandoned and a rider to the hospitalization contract substituted. This is because of the decision to issue surgical contracts only to subscribers to the hospital service. Since the offering of the surgical service, May 1, 1943, 11,000 members have been acquired and a reserve of over $11,000 accumulated. Only 75 per cent of the fee schedule has been paid to physicians, but sufficient reserves in excess of the amount mentioned have now been set aside to pay the additional 25 per cent.

MASSACHUSETTS MEDICAL SERVICE

BOSTON

JAMES C. MCCANN, M.D., President

Enabling legislation was procured on May 22, 1941. The Council of the Massachusetts Medical Society voted a fund of $25,000 for the initial expenses in establishing the Massachusetts Medical Service. The Commissioner of Insurance ruled that $5,000 of this amount could be used for initial expenses, but the remaining $20,000 had to be placed on deposit under a letter of trust with the requirement that the amount should not be further reduced until after a surplus of $225,000 had been reached.

The program was initiated with a surgical-obstetric contract to be broadened, first, to complete hospital coverage and later to as near complete medical coverage as is feasible. The program is to be administered on a contract basis with the Blue Cross organization.

During the first six months, ended in June 1943, growth was slow—only 7,000 being enrolled—but at the end of the next six months 23,000 in two hundred groups had enrolled. In a number of instances the employer had paid all premiums. This was permitted as a substitute for an increase in wages.

Some liberalization of group enrolment has been found possible without endangering actuarial safety. This has been accomplished by substituting specific tested standards for a fixed percentage of group membership. These standards are based on (1) the "seasoning" of the group as determined by the period of enrolment in "Blue Cross" hospitalization plans, (2) the loss ratio shown by such experience and (3) the "cultural" level of the group. The plan is now operating on what is considered a sound financial basis and has set up reserves to meet obstetric care and tonsillectomies, which, under the contract, are not available during the first year of enrolment. It is expected that a surplus will soon be accumulated which will make it possible to extend coverage to hospitalized medical cases.

MICHIGAN MEDICAL SERVICE

DETROIT

JAY C. KETCHUM, Executive Vice President

The number of subscribers has increased from 440,000 on March 1, 1943 to 600,455 on Nov. 30, 1943. The deficit as shown by the audit of Dec. 31, 1942 was $439,778.04; Sept. 30, 1943 it had been reduced to $270,382.57. Total income from fees in the nine months ended Sept. 30, 1943 was $2,428,125.70. Final audit for Dec. 31, 1943 had not been completed in time for this report, but the deficit was estimated to have been reduced to about $150,000.

Premium rates are now 60 cents a month for the individual subscriber in a group, increasing 5 cents for each 15 per cent of females in the group to a maximum of 90 cents, $1.60 for individual and spouse and $2.25 for a family.

SURGICAL CARE, INC.

KANSAS CITY, MO.

F. K. HELSBY, Director, Group Hospital Service

A statewide plan was prepared on Dec. 11, 1937, and an enabling act has been enacted. Jackson and Wyandotte counties (Kansas City) operated a plan, Surgical Care, Inc., during 1943 which has paid all claims 100 per cent from earned income.[2] As of Dec. 15, 1943, 6,500 persons had been enrolled in two hundred groups.

New groups are being enrolled daily, and the administration considers that the operation of the plan has been successful so far.

MEDICAL SERVICE ADMINISTRATION OF NEW JERSEY

NEWARK

NORMAN M. SCOTT, M.D., Medical Director

The Medical Society of New Jersey has approved of the organization of two nonprofit medical service corporations under the provisions of an act passed by the state legislature in 1940.

These corporations operate nonprofit medical service plans for the payment of medical services, with money received from their subscribers or with grants received from governmental agencies for payment of medical care rendered needy persons.

The administrative policies of these corporations are governed by boards of trustees consisting of eight members nominated by the Medical Society of New Jersey. They are under supervision of the New Jersey Department of Banking and Insurance.

Medical Service Administration of New Jersey.—The administration operates medical service plans for the benefit of selected low income groups, the medical indigent and the indigent.

Farm Security Medical Plan.—The administration has operated the Farm Security Administration Medical Plan for the benefit of Farm Security clients in New Jersey since May 1941. This plan provides payment for medical care rendered in the home of the patient or office of the physician. It does not include cost of hospitalization or medical care rendered in a hospital. Physicians' fees are $1.50 for office calls and $2.50 for home calls. Subscription rates are $16 for individuals, $20 for husband and wife, $21 for a family of three, $22 for a family of four, $23 for a family of five and $24 for a family of six or more.

During recent months the plan has frequently had deficits owing to unsatisfactory enrolment and high sick rates.

City of Newark Medical Plan.—This plan replaces the former arrangement under which indigent persons in the city of Newark were cared for by city physicians. The plan provides for free choice of physicians and payment by the Medical Service Administration Plan for medical care rendered to persons whose names appear on the rolls of the Newark Department of Welfare who are confined to their homes because of illness. The plan does not include payment for office calls, this type of service being rendered through existing clinic facilities. Physicians are paid $2 for a day visit and $3 for a night visit, the adequacy and eligibility of service being passed on by a committee of the Essex County Medical Society, which reviews the bills each month. Expenditures by the Medical Service Administration Plan for this care are reimbursed monthly by the Newark Department of Welfare, plus 10 per cent toward administrative costs.

Arrangements are now being completed for the inclusion of certain selected medically indigent groups under this plan.

The Medical-Surgical Plan of New Jersey.—This plan is organized as a separate corporation in order to facilitate accounting methods and avoid support of other plans by money received from its subscribers.

As of Nov. 30, 1943 Medical-Surgical Plan had total effective enrolment of 14,977 persons covered by 6,940 contracts.

From its earned income it has paid all organization and administrative expenses and paid physicians for all eligible services in accordance with 100 per cent of its predetermined schedule of payments.

For the eleven months ended Nov. 30, 1943 its expenditures from its earned income were:

Expenditures	Per Cent of Earned Subscription Income
Claims (paid and accrued)	61.38
Solicitation	9.83
Administration	15.03
Reserve	13.76
	100.00

MEDICAL AND SURGICAL CARE, INC.

UTICA, N. Y.

H. C. STEPHENSON, Managing Director

In ten months ended Oct. 31, 1943 the total receipts were $111,851.14, with $39,346.47 as funds on hand, of which $15,029.91 was earned surplus. In September 1943 it had sold 9,629 contracts covering 19,215 persons.[3] Some enrolment is obtained from farm bureau and granges, and clients of the Farm Security Administration have been enrolled for four years for hospitalization, and the plan is now considering their enrolment for a low cost surgical plan. There are no income limits as the indemnity plan is used, with total payments in one year restricted to $225 for the subscriber, $125 for one dependent and $350 for any three or more persons covered by a contract.

The success of the original plan led to the offer of a "low cost" plan with lower enrolment rates and somewhat restricted benefits and limits of $200, $100 and $325 to the classes mentioned. A rider to contracts is also offered covering general medical services, also on the indemnity plan, paying $2 for office and hospital calls and $3 for home calls for subscribers and $1 and $1.50 for corresponding services to dependents. Calls are limited to fifty-two for subscriber and one hundred and fifty for subscriber and all dependents in one year.

2. Lockwood, Ira, H.: Prepayment Plan for Cases Requiring Surgery and Hospitalization, Kansas City M. J. **14**: 14 (Nov.-Dec.) 1943.

3. Bulletin 62, Public Relations Bureau, Medical Society of the State of New York, Jan. 1, 1944.

MEDICAL EXPENSE FUND OF NEW YORK, INC.[3]

BROOKLYN

F. E. ELLIOTT, M.D., Secretary-Treasurer

This is the pioneer of the four medical plans now operating in this state. It has some 5,000 subscribers, almost an equal number of participating physicians. Sixteen of its trustees are physicians; eight are laymen. In 1942 Medical Expense, Inc., met all its obligations in full. Mr. Rowland H. George is president; Dr. Frederic E. Elliott is secretary-treasurer; Dr. Charles Gordon Heyd is chairman of the general advisory board.

WESTERN NEW YORK MEDICAL PLAN, INC.

BUFFALO

CARL M. METZGER, Executive Director

The Dec. 1, 1943 membership was 22,000, having doubled since March 1, 1943. Operating on the indemnity plan, the physician renders his bill, of which the plan pays the amount stipulated in the contract and notifies the patient and the physician of the amount, if any, still due. Since the indemnity schedule roughly corresponds to the prevailing fees charged in the income group up to $3,000, the physician is urged to consider the economic status of the individual patient and to accept the indemnity payable by the corporation as a full discharge of the liability of the patient, if such patient is within the average income group.

Although 75 per cent is the basis of settlement, with a subsequent payment at the end of the year, since the introduction of the new contract the plan has paid the doctor the full amount of the indemnity schedule.

MEDICAL SERVICE ASSOCIATION, INC.

DURHAM, N. C.

E. D. MALLARD, Assistant Secretary

Memberships are sold by the Hospital Care Association, which also administers the plan. The subsciption rates apply to both organizations and are distributed as shown:

	Weekly	To Medical Service	To Hospitalization
Male employees	$0.33	$0.20	$0.13
Female employees	.37	.20	.17
Employees, 1 dependent	.55	.25	.30
Family, all children under 18	.65	.25	.40

Two dollars a day is paid for the first eight days to the physician caring for a patient in the hospital with a nonsurgical illness. Not more than two consultation fees of $5 each are paid. A total of $50 is allowed for medical care in one year. Surgeons receive $75 for major and $15 for minor operations requiring hospitalization. Twenty-five dollars is paid for a delivery. On Oct. 30, 1943 there were 4,177 enrolments in the Medical Service Association, covering 13,031 persons.

HOSPITAL SAVINGS ASSOCIATION OF NORTH CAROLINA, INC.

CHAPEL HILL

E. B. CRAWFORD, Executive Director

In December 1943 there were approximately 210,000 participants in the plan, of whom 40,000 were covered by a combined program of hospitalization and surgical care. There are no income limits, but 80 per cent of the membership has incomes under $1,500 a year.

There is a statewide plan for Farm Security Administration under government contract. Approximately 2,500 families are covered (14,000 persons) and hospitalization furnished for only $12 annually. The surgical plan pays physicians on a fee schedule, and payments are on an indemnity basis toward regular charges. Surgical care is limited to $75 a year per person. There has been no accurate breakdown of costs between the hospitalization and the surgical plan, but it is estimated that surgical claims have absorbed about 75 per cent of the income.

MEDICAL SERVICE ASSOCIATION OF PENNSYLVANIA

HARRISBURG

RALPH W. DAVIES, Field Director

There were approximately 8,500 subscribers as of Jan. 1, 1944. The following income limits on enrolment have been established with the provision that those earning above these limits are enrolled on an indemnity or credit basis: individual, $30 weekly; with 1 dependent, $45, and with more than 1 dependent $60 weekly.

When the income of any subscriber has exceeded these limits for the twenty-five preceding weeks, the physician may make an additional charge for his services and the association will pay only the amount specified in the fee schedule. A revision of the fee schedule is now in process and the maximum allowance will be increased from 50 to 75 units. The basic value of the unit is $2.

DALLAS COUNTY MEDICAL PLAN

DALLAS, TEXAS

The State Medical Association of Texas in 1941 asked the state legislature for an enabling act to permit the establishment of prepayment plans by medical societies, but the legislature did not enact such a law, and there is now some doubt of its necessity. The Dallas County Medical Plan has continued to operate successfully with no significant changes. The monthly subscription rate was increased on July 1, 1943 from $1.50 to $1.75, and the $5 deductible clause dropped. There were 378 subscribers as of Dec. 1, 1943.[4]

The Council on Medical Economics of the state medical association has worked out a plan for the state which the Council reports would "have solved important problems" had legislation been enacted to permit its expansion.[5] Texas is largely a rural state, and especial attention has been given to Farm Security Administration programs, which in 1943 were conducted in 122 counties and served 33,793 persons.[6]

Migratory camps are conducted in eight localities. Experimental programs are conducted by the Farm Security Administration in Cass County covering 2,379 families, or one third of the population in an "over-all medical program," and in Wheeler County serving 1,000 families. These two programs are subsidized by the Farm Security Administration at a cost of $75,000.

UTAH MEDICAL & HOSPITAL BENEFIT ASSOCIATION

SALT LAKE CITY

W. H. TIBBALS, Executive Secretary

Because of apparent inability to secure sufficient volume, it has been deemed best to urge the hospitals to organize a Blue Cross Plan for the purpose of handling hospitalization on a service basis. This is now in process.

4. Report received from Dr. D. W. Carter Jr., secretary-treasurer, Dallas County Medical Plan.
5. Texas State J. Med. **38**: 89 (June) 1942.
6. Texas State J. Med. **39**: 88 (June) 1943.

NATIONAL CONFERENCE ON MEDICAL SERVICE

The eighteenth annual meeting of the National Conference on Medical Service will be held Sunday, February 13, at the Palmer House in Chicago. The program is as follows:

MORNING

The Association of American Physicians and Surgeons

Plans of Lake County, Ind., physicians for a national organization
ROLLEN W. WATERSON, Gary, Ind. Executive Secretary of the Lake County Medical Society

Proposals by the Medical Societies of New England

Six New England medical societies join in a statement proposing alternatives to the Wagner-Murray-Dingell program.
MICHAEL A. TIGHE, M.D., Lowell. Secretary, Massachusetts Medical Society.

The Western Public Health League

Organization formed by eleven western medical associations
DWIGHT H. MURRAY, M.D., Napa, Calif. Chairman of the Western Public Health League

Discussion

BEN H. READ, San Francisco. Executive Secretary, Public Health League of California.

Report from the Council on Medical Service and Public Relations

Created by the House of Delegates of the American Medical Association in June 1943
L. H. BAUER, M.D., Hempstead, N. Y. Chairman, Council of Medical Service and Public Relations

AFTERNOON

The Doctor's Job

HON. WALTER H. JUDD, Washington, D. C. Congressman from the Fifth District, Minnesota

Social and Economic Trends in Relation to Medical Practice

W. L. BURNAP, M.D., Fergus Falls, Minn. President, National Conference on Medical Service

The Challenge to American Medicine

E. H. SKINNER, M.D., Kansas City, Mo. Editor, Kansas City Medical Journal

Digest of Recent Medical Legislation

J. W. HOLLOWAY, JR., Chicago. Director, Bureau of Legal Medicine and Legislation, American Medical Association

Obstetric and Pediatric Care for Soldiers' Wives and Infants

W. W. BAUER, M.D., Chicago. Director, Bureau of Health Education, American Medical Association

Dr. W. L. Burnap, Fergus Falls, Minn., is president, and Dr. C. L. Palmer, Pittsburgh, is secretary of the conference.

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 4:30 p. m. Eastern war time (3:30 p. m. Central war time, 2:30 p. m. Mountain war time and 1:30 p. m. Pacific war time).

The titles and guest speakers for the next three programs are as follows:

February 5. "White Battalions."
Speaker, Col. Florence A. Blanchfield, Army Nurse Corps, Office of the Surgeon General, Washington, D. C.

February 12. "Selective Placement in Industry."
Speaker, Harold A. Vonachen, M.D., medical director, Caterpillar Tractor Company, Peoria, Ill.

February 19. "Hometown Heroes."
Speaker, James E. Paullin, M.D., President, American Medical Association.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 1633 has passed the Senate, proposing to amend the nurses' training act so as to provide that the head of any federal agency, department or establishment may request and accept transfers of student nurses to a federal hospital who are transferrable under the original act. H. J. Res. 208 has passed the Senate, authorizing additional appropriations for the supplying and distribution of farm labor. This bill was amended on the floor of the Senate so that funds available for providing health and medical services to recruited farm laborers may be used to provide such services to migratory workers and their families who have entered an area without recruitment or assistance of any government agency and have engaged in agricultural work and to whom adequate health and medical services are not otherwise available in the area where they are working. H. R. 4070 has been reported to the House, making appropriations for the Executive Office and sundry independent executive bureaus, boards, commissions and offices for the fiscal year ending June 30, 1945. This bill, among other things, appropriates the sum of $7,374,500 for use by the Administrator of Veterans' Affairs for extending any of the facilities under the jurisdiction of the Veterans' Administration. This appropriation may not be used to provide additional beds. The committee report suggests that funds for such additional beds may be made available at a later date. The bill also authorizes the Administrator to employ medical consultants for duty on such terms as he may deem advisable and without regard to the civil service and classification laws.

Bills Introduced.—S. 1670, introduced by Senator Thomas of Utah, proposes to promote the welfare of the people by establishing a publicly supported adult education program stemming from the state universities and land-grant colleges. Such extension courses will serve, among others, individuals interested in gaining knowledge of public safety, sanitation, health, nutrition, recreation, housing, government, town planning, school facilities and social welfare services. H. R. 4027, introduced by Representative Peterson, Florida, provides that in the administration of laws pertaining to veterans, retired officers and enlisted men of the Army, Navy, Marine Corps and Coast Guard shall be entitled to hospitalization and domiciliary care. H. R. 4051, introduced by Representative Beall, Maryland, H. R. 4052, introduced by Representative Hays, Arkansas, H. R. 4055, introduced by Representative Rogers, California, and H. R. 4057, introduced by Representative Rankin, Mississippi, propose to enact the Servicemen's Aid Act of 1944. These bills would declare the Veterans' Administration to be a vital agency of the United States entitled to priority second only to the War and Navy departments, would direct the construction of additional hospital beds for veterans and would authorize the Administrator of Veterans' Affairs and the Secretary of War and the Secretary of the Navy to enter into agreements and contracts for the mutual use or exchange of use of hospital facilities. H. R. 4063, introduced by Representative Peterson, Florida, would authorize the President to appoint optometrists as commissioned officers in the Medical Corps of the Army and Navy on the recommendation of the Surgeon General of the Army or Navy, as the case may be. H. R. 4072, introduced by Representative Weiss, Pennsylvania, proposes to grant commissions in the Army to members of local selective service boards.

STATE MEDICAL LEGISLATION

New York

Bills Introduced.—A. 252 proposes to require the board of education of each city and of each school district maintaining public schools to provide, in cooperation with the local department of health or health officer, adequate health services for pupils attending such schools who are 15 years of age or over. A. 362, to amend those provisions of the medical practice act relating to annual registration, proposes that the list of registered physicians and dentists shall be published and mailed on March 1 in each even numbered year after 1944 instead of annually, as the present law provides. It also proposes to strike out the provision in the present law that the names of physicians who are added to the list after the printing and distribution of the list shall be reported quarterly on request to the secretary of the state medical society. A. 369 proposes to make it a felony, punishable by imprisonment for not less than one and one-half years nor more than three years, for a person, knowing himself to be infected with venereal disease, to have sexual

intercourse with another person. The present law applies only to such person having sexual intercourse with persons in the military or naval service.

Virginia

Bill Introduced.—H. 29 proposes to repeal the existing medical practice act and to enact in its stead an entire new act. The board of examiners, it is proposed, is to consist of one "regular medical doctor" from each congressional district and one homeopath, one osteopath, one chiropractor and one naturopath from the state at large. All applicants for licenses to practice any form of the healing art must pass examinations given by this board. All applicants, regardless of the system of practice that they intend to pursue, must pass examinations given by the members of the board who are "medical doctors" in anatomy, histology, physiology, physiological physics and chemistry, and pathology and bacteriology or microbiology. After successfully passing the examination in the aforementioned subjects, an applicant for a license to practice osteopathy, chiropractic or naturopathy must pass examinations given by the full board in medical jurisprudence, public health and hygiene, and the philosophy, practice and therapeutics of the particular school or branch of the healing art of which the applicant is a devotee. An applicant for a license to practice medicine or homeopathy must pass examinations to be given by the full board in the practice of medicine, pediatrics, neurology and psychiatry, surgery, including gynecology, obstetrics, including embryology, materia medica and therapeutics, and medical jurisprudence, public health and hygiene. The bill defines the practice of osteopathy as the treatment of human ailments, diseases or infirmities by any means or method other than surgery or drugs, and provision is made whereby osteopaths may obtain licenses to practice medicine and surgery without restriction. Chiropractic is defined as the treatment of human ailments, diseases or infirmities by manual adjustment of the twenty-four movable vertebrae of the spinal column for the purpose of relieving pressure on the spinal nerves. Naturopathy is defined as treatment by means of heat, light, diet, massage, baths and other natural agents but does not include the use of surgery, the x-rays, x-ray therapy, electrotherapeutics or the prescribing of any drug or medicine. S. 53 proposes to authorize the establishment and maintenance of an institution, to be known as the Virginia Institute of Psychiatry, for the study, treatment, prevention and research of mental disorders and the training of student nurses and physicians.

WOMAN'S AUXILIARY

Arkansas

The Sevier County auxiliary voted to send *Hygeia* to the schools of the county. Its programs for the year include such topics as "Pioneer Doctors of Sevier County," "Penicillin," "Public Health in Other Counties" and "Hygeia." Mrs. L. J. Kosminsky, state president, spoke at the November meeting.

The Sebastian County auxiliary prepared Christmas boxes for the Camp Chafee station hospital patients. It also contributed funds for the purchase of the Arkansas Tuberculosis Sanatorium at Booneville.

Kansas

The Sedgwick County auxiliary will hold three social meetings a year; the rest of the meeting time will be spent in rolling bandages at the Red Cross office. At the October meeting Mrs. L. E. Knapp discussed "Alice in Wonderland, 1943."

The Wyandotte County auxiliary held a luncheon recently at the home of Mrs. L. M. Nason in Kansas City. Mrs. F. F. Kimball spoke on "Can We Have a Just and Honorable Peace?"

At a recent meeting of the Saline County auxiliary "Medical Practice in the Army" and "Flight Surgery" were discussed by two doctors from nearby camps. Eleven wives of army physicians have joined the auxiliary.

Minnesota

The Minnesota medical auxiliary held its fall board meeting on October 22. Mrs. F. S. McKinney presided, and three major projects of the year were discussed. Mrs. Claude Kennedy explained the aims of the Medical and Surgical Relief Committee, Mrs. Harlow Hansen outlined plans for individual counties in aiding the emergency nursing committee and Mrs. Ivar Sivertsen presented the Cadet Nurse Corps.

The Ramsey County auxiliary opened its new year with an informal tea at the home of Mrs. Gordon Kamman of St. Paul.

The Nicollet-LeSueur auxiliary recently had a dinner at the Burton Hotel in Mankato.

The Hennepin County auxiliary recently had a tea at the home of Mrs. A. E. Benjamin, at which time thirty-one charter members of the original eighty-two were honored guests. Mrs. Harold Wahlquist, president, presided, and the program was devoted to a review of the organization's thirty-three years' existence. Mrs. W. J. Byrnes, first president, gave reminiscences and told of the aims of the group, which was the first medical auxiliary in the United States. In November the auxiliary entertained the dentists' wives and the wives of doctors in service at Fort Snelling, Wold Chamberlain Airport and the university. The auxiliary recently sponsored the sale of articles made by patients of the Glen Lake Sanitarium, from which more than $2,000 was obtained.

Mississippi

The officers of the Mississippi auxiliary are Mrs. H. C. Ricks, president, Jackson; Mrs. L. J. Clark, president-elect, Vicksburg; Mrs. V. B. Philpot, first vice president, Houston; Mrs. Henry Boswell, second vice president, Sanatorium; Mrs. W. H. Anderson, third vice president, Booneville; Mrs. Stanley Hill, assistant, Corinth; Mrs. R. B. Caldwell, fourth vice president, Baldwyn; Mrs. George E. Riley, recording secretary, Jackson; Mrs. J. D. Simmons, treasurer, Cleveland; Mrs. Harvey Garrison Sr., history and archives, Jackson, and Mrs. W. C. Pool, parliamentarian, Carey.

Guests representing auxiliaries in ten different states attended the tea opening the 1943-1944 season of the Woman's Auxiliary to the Central Medical Society, at the home of Mrs. H. C. Ricks, Jackson.

Ohio

Fourteen members were present at the fall board meeting of the Ohio auxiliary held in Columbus recently. Charles S. Nelson, executive secretary of the Ohio State Medical Association, discussed the Wagner-Murray-Dingell bill and plans for combating its enactment. The next annual meeting of the auxiliary will be held in Columbus, May 2-4. Mrs. John G. Briggs was named convention chairman.

The auxiliaries of Butler, Franklin, Highland, Mahoning, Ross and Summit counties had fall meetings.

Texas

The Dallas County auxiliary recently had a luncheon at the Melrose Hotel in Dallas in honor of Mrs. A. B. Pumphrey, Fort Worth, state president. Mrs. Pumphrey spoke on "The American Way of Life."

Mrs. Samuel Heald was guest speaker at a recent meeting of the Harris County auxiliary. She spoke on "Present Day Problems in South America." Mrs. Heald lived in Panama for twenty-three years, and during World War I she was head of the home service of the American Red Cross and was awarded the St. John of Jerusalem decoration by the British government for her work with the British Red Cross.

During the third war loan drive the auxiliary members of the Taylor-Jones counties sold bonds amounting to $4,550.

Mrs. A. B. Pumphrey, state president, was guest speaker at the October meeting of the McLennan County auxiliary.

The Hattie Hunt auxiliary and the Liberty-Chambers County auxiliary held meetings recently.

Texas recently lost two members, Mrs. C. P. Carlisle of Dallas, who died October 11, and Mrs. J. D. Magee of Abilene, who died October 19.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Conferences on Psychiatry.—The department of psychiatry at Mount Zion Hospital, San Francisco, will begin a series of evening conferences on February 9 devoted to some principles of child guidance as illustrated by case presentations. The first two conferences, February 9 and February 23, are being devoted to a "Behavior Disorder in a Boy of Five."

IDAHO

Dr. G. R. Smith Named State Health Director.—Dr. George R. Smith, Boise, medical superintendent of the state mental institution at Blackfoot, has been appointed state director of public health. Dr. Smith graduated at Creighton University School of Medicine, Omaha, in 1909. Dr. Lynn J. Lull has been appointed director of local public health services in Idaho. He was formerly director of the division of venereal disease control for the Colorado State Division of Public Health, Denver.

ILLINOIS

The Swanberg Medical Foundation.—Dr. Harold Swanberg, Quincy, has set up an irrevocable trust, organized not for pecuniary profit, that will eventually enable the Adams County Medical Society "to sponsor or undertake one or more things of a charitable, scientific, literary or educational nature, that would not be possible or would be difficult to undertake without the financial aid of the foundation and which will bring public and professional honor and respect to the medical profession." The trust, which was approved by the Adams County Medical Society in December, is being administered by a board of trustees of eight physicians, serving without remuneration. Contributions may be made by any individual to the new foundation, which will be known as the Swanberg Medical Foundation. According to the *Mississippi Valley Medical Journal*, Dr. Swanberg plans to make further contributions as his income permits, but no project will be sponsored until the funds exceed $10,000.

Chicago

Personal.—Dr. Esther C. Marting, formerly director of the tumor clinic of the Cincinnati General Hospital and instructor in surgery at the University of Cincinnati College of Medicine, has joined the staff of the Chicago Tumor Institute.

Cancer Committee Affiliates with Tuberculosis Institute.—The Tuberculosis Institute of Chicago and Cook County has accepted an affiliation of the Chicago Cancer Committee, organized to promote anticancer activities in the Chicago area. Dr. Ludvig Hektoen, executive director of the National Advisory Cancer Council, is chairman of the Chicago Cancer Committee.

Dr. Bevan's Estate Revalued at Over a Million Dollars.—Dr. Arthur Dean Bevan, who died June 10, 1943, left an estate of $1,683,777 instead of $600,000 originally estimated, newspapers report. The estate, with the exception of some personal bequests, is placed in trust for Mrs. Anna Bevan, widow of Dr. Bevan. Eventually the bulk of the estate will go to Presbyterian Hospital and Rush Medical College. The Lake Forest Hospital will get $25,000.

KANSAS

Physicians Share Work of Resigned Director of Maternal Health.—Dr. Floyd C. Beelman with the assistance of Dr. Harry R. Ross, Topeka, is directing the work of the division of maternal and child health of the Kansas State Board of Health, pending the appointment of a person to succeed Dr. William Fred Mayes, resigned. Dr. Beelman is secretary of the state board..

Graduate Course on Venereal Disease.—The University of Kansas School of Medicine, the state board of health and the Kansas Medical Society are cooperating in a series of postgraduate courses on venereal diseases to be held at the following places throughout the state:

Kansas City, February 1-2.
Parsons, February 3-4.
Wichita, February 5-7.
Hutchinson, February 7-8.
Dodge City, February 9-10.
Topeka, February 12-13.
Beloit, February 14-15.
Salina, February 16-17.

Instructors in the courses will be Drs. Percy S. Pelouze, assistant professor of urology, University of Pennsylvania School of Medicine, Philadelphia, and special consultant to the U. S. Public Health Service, and Dr. John Philip Berger, Wichita, assistant to Dr. Udo J. Wile, head of the department of dermatology and syphilology, University of Michigan Medical School, Ann Arbor, and medical director of the division of venereal disease control of the U. S. Public Health Service.

MICHIGAN

Dr. Coggeshall on Leave of Absence.—Dr. Lowell T. Coggeshall, professor of epidemiology, University of Michigan School of Public Health, Ann Arbor, has been granted a leave of absence to become medical director for the Marine rehabilitation program on the west coast, newspapers reported, January 4.

The Beaumont Lecture.—Dr. Frank D. Dickson, associate professor of clinical surgery, University of Kansas School of Medicine, will deliver the annual Beaumont Lecture, February 21, at the Detroit Institute of Arts under the auspices of the Wayne County Medical Society. He will discuss "Osteomyelitis."

Conference on the Deaf and the Hard of Hearing.—The Professional Association of the Michigan School for the Deaf conducted a conference in Flint, February 3-5. Sessions were devoted to the slow-learning child, the hard of hearing and deafened, home life and mental hygiene, hearing conservation, vocational adjustment, speech development, motivation, language development, mental hygiene, the spastic child, reading for the deaf and higher education.

Dr. Littlejohn Named Medical Director of Wayne County—Dr. David Littlejohn, Sault Ste. Marie, for the past seven years director of the Chippewa County Health Department, became director of the Wayne County Health Department on February 1. Dr. Littlejohn once served as acting state health commissioner of West Virginia. He graduated at the Central Medical College of St. Joseph, Mo., in 1897. The Wayne County Department of Health was created in 1943, and Dr. Joseph G. Molner had been serving as acting director until the selection of a permanent appointee.

Physician Sentenced for Obstructing Justice.—Dr. Martin B. Robinson, Detroit, entered Southern Michigan Prison, January 5, to begin serving a sentence of from three to five years for conspiracy to obstruct justice, newspapers reported. The physician was sentenced in Wayne County, Nov. 13, 1940. He lost his appeal in the U. S. Supreme Court. Newspapers identify Dr. Robinson as a "numbers-house operator" and stated that his arrest "set off Detroit's grand jury investigation into vice and gambling." The Detroit *Free Press* stated that Robinson's conviction came nearly eleven months after "four hoodlums allegedly held up Robinson, opening a series of events which resulted in inauguration of the graft grand jury and a major police shakeup."

MISSOURI

Mickle Fellowship Awarded to Dr. Graham.—The University of Toronto Faculty of Medicine, Ontario, has awarded the Charles Mickle Fellowship for 1943 to Dr. Evarts A. Graham, Bixby professor of surgery at Washington University School of Medicine, St. Louis, surgeon-in-chief at Barnes Hospital, for his discovery of a method of "testing gallbladder functions by the use of certain organic compounds and the diagnosis and treatment of carcinoma of the lung."

Fund for Research in Ophthalmology.—Dr. Edward J. Curran, Kansas City, professor and head of the department of ophthalmology of the medical school of the University of Kansas, has given $10,000 to the school to provide equipment, material and assistance for research in the department of ophthalmology. The gift was made to the university through the Kansas University Endowment Association, which has been made trustee to administer the fund. Dr. Curran has been a member of the staff of the medical school since 1911.

Personal.—Dr. Kehar Singh Chouke, assistant professor of anatomy, the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania, Philadelphia, is on a six months leave of absence to serve as visiting associate professor of anatomy in Washington University School of Medicine, St. Louis.——Dr. Druery R. Thorn has resigned as medical director of the Kansas City General Hospital.——Dr. Vincent T. Williams, Kansas City, was recently presented with a merit certificate and a gold key in recognition of his service as editor of the Jackson County Medical Society *Weekly Bulletin*.

NEW YORK

Personal.—Dr. William W. Wright, medical superintendent of the Marcy State Hospital, Marcy, ever since its separation from the Utica State Hospital, Utica, in July 1931, recently retired from the state hospital service to enter private practice in neurology and psychiatry in Utica.——Horatio M. Pollock, Ph.D., recently retired from state service after thirty-two years as director of the bureau of statistics of the New York State Department of Mental Hygiene.——Dr. Hiram Charles Goldberg, Albany, has retired as medical examiner and eye specialist in the workmen's compensation division of the state labor department; he held the position for twenty-one years.

New York City

The Harvey Lecture.—Dr. Dickinson W. Richards Jr., associate professor of clinical medicine, Columbia University College of Physicians and Surgeons, will deliver the fifth Harvey Society Lecture of the current series at the New York Academy of Medicine on February 17. His subject will be "The Circulation in Traumatic Shock in Man."

The Hermann Biggs Memorial Lecture.—Dr. Wilbur A. Sawyer, director, International Health Division, Rockefeller Foundation, will deliver the annual Hermann M. Biggs Memorial Lecture at the New York Academy of Medicine under the auspices of the committee on public health relations, April 6. The subject of his lecture will be "International Health."

American and Soviet Blood Banks.—A symposium on American and Soviet blood and plasma banks was conducted at the New York Academy of Medicine, January 26, under the auspices of the New York County Chapter of the American-Soviet Medical Society. Among the speakers were Dr. Charles Richard Drew, assistant professor of surgery, Howard University College of Medicine, Washington, D. C., on "Evolution of the Blood Bank"; Dr. Lester J. Unger, assistant clinical professor of surgery, New York Post-Graduate Medical School and Hospital, Columbia University, "Blood and Plasma Banks in Civilian Practice," and Comdr. Benjamin G. Feen (MC), U. S. Navy, "Blood and Plasma Banks at the Battlefront."

Physician Pleads Guilty in Workmen's Compensation Investigation.—Dr. Theodore R. Freedman, Rockaway Beach, the first person to be indicted in New York County in the investigation of the so-called state compensation racketeering, pleaded guilty on January 7 to a petit larceny count involving him in frauds against the city. Judge Sherman, before whom the plea was entered, released the physician in $500 bail. He was to appear for sentence on January 28. According to the New York *Times* Dr. Freedman is liable to a penitentiary term up to three years. Last year Dr. Freedman was restrained from treating workmen's compensation claimants pending the outcome of an indictment for larceny in connection with padding bills for treating these patients (THE JOURNAL, July 10, 1943, p. 757).

Senior Health Officers Appointed.—The New York City Department of Health announces the appointment of five new senior health officers: Dr. Sophie Rabinoff, district health officer at the East Harlem Health Center, will direct the Tremont Health Center and Bronx Borough Office; Dr. Max Bernstein, formerly district health officer of the Lower West Side Health Center in Manhattan, has been named for the Richmond Health Center and Borough Office, Staten Island; Dr. Arthur I. Blau, district health officer at the Red Hook-Gowanus Health Center, Brooklyn, has been named to the Jamaica health center and the Queens Borough office; Dr. Jacob H. Landes, district health officer, has been assigned to the Fort Greene Health Center and Brooklyn Borough office, where he has served as district health officer for the past three years; Dr. Jerome Meyers, health officer of the Mott-Haven Health Center in the Bronx, has been named to the Lower West Side Health Center.

Medicine Honors Philanthropist. — Lucius N. Littauer, retired manufacturer, received the honorary degree of doctor of laws from New York University, January 20, during a brief ceremony held in the psychiatric division of Bellevue Hospital. In a citation accompanying the award, Mr. Littauer was praised for his contribution to the department of psychiatry at New York University College of Medicine and Bellevue Hospital, the creation of a professorship in psychiatry in 1942 now held by Dr. Samuel Bernard Wortis. Dr. Samuel A. Brown, dean emeritus of the college of medicine, stated that Mr. Littauer "has consistently employed each success as a means of giving greater scope to his lifelong propensity by helping others to help themselves." Dr. Edward M. Bernecker, commissioner of hospitals, averred that Mr. Littauer was really the father of the research council of the city department of hospitals "because it was he who in 1935 made the first substantial donation for the research council and until today he continues as one of its members." Among others attending the ceremony were Harry Starr, secretary of the Littauer Foundation, Alvin S. Johnson, LL.D., director of the New School for Social Research, Dr. Alan Gregg, director of medical sciences of the Rockefeller Foundation, and Dr. Elliott P. Joslin, clinical professor of medicine emeritus, Harvard Medical School, Boston.

Fourteen Point Program Announced by Dr. Berens.—In his inaugural address as president of the Medical Society of the County of New York, Dr. Conrad Berens stated "that the medical profession will resist any attempt to destroy medical responsibility for the care of the sick by the imposition of lay political controls over medical practice." In his address Dr. Berens outlined a fourteen point program to which he said his administration and the county society were pledged:

Establishing a unified system of medical care for the low and moderate income classes of this city, including diagnostic and preventive as well as therapeutic services.

Participation in the development of plans for the equitable distribution of physicians throughout the country.

Thorough study of the educational requirements for medical licensure.

Continued study and implementing of voluntary plans for improving the quality and distribution of medical care and adjusting its costs to the needs of the time.

Relationship of the medical profession to the federal government and the state agencies.

Education and ethical control of nonmedical personnel associated with all branches of medicine.

The education, hospital training, practice and certification of Negro physicians.

The development of adequate hospital facilities where needed.

Study of conditions which interfere with the practice of medicine to the detriment of public health.

Study of methods of improving and furthering medical education and the exchange of medical ideas and methods both in the United States and in other countries.

Leadership and closer cooperation with government industry, commerce, labor and social agencies for the expansion and improvement of industrial medical service.

Establishment of a concrete plan for the postwar professional rehabilitation of New York County physicians returning from service.

Thorough housecleaning in the field of workmen's compensation and elsewhere to eliminate undesirable professional practices and investigation of the conditions that have produced these practices with the view to preventing their recurrence.

Establishment of adequate public relations with a view to better public understanding of the aims and accomplishments of American medicine and of our society.

NORTH CAROLINA

Physicians Honored on Birthdays. — The Mecklenburg County Medical Society presented walking canes to Drs. Thomas N. Reid, Matthews, and Thomas M. McCoy, Charlotte, as a feature of its custom to honor members who attain their 70th birthdays. Dr. Reid is 75 years of age and Dr. McCoy is 70.

Medical Symposium.—A medical symposium will be presented at the Washington Duke Hotel, Durham, February 16-17, under the auspices of the staff of Watts Hospital. Among the speakers will be:

Dr. Tinsley R. Harrison, Winston-Salem, The Abuse of Rest as a Therapeutic Measure in Patients with Cardiac Disease.
Dr. Howard H. Bradshaw, Winston-Salem, The Surgical Treatment of Bronchiectasis.
Dr. Kenneth E. Appel, Philadelphia, Psychiatry in the Present World.
Lieut. Col. Baldwin H. E. W. Lucke, M. R. C., Renal Lesions of the Crush Syndrome, Burns, etc.
Lieut. Col. Thomas Fitz-Hugh Jr., M. R. C., Cerebral Malaria.
Brig. Gen. Hugh J. Morgan, M. C., A. U. S., Medicine Overseas.
Brig. Gen. James S. Simmons, M. C., U. S. Army (subject not announced).

Clinicopathologic conferences will be presented by Drs. Wiley D. Forbus and Oscar C. E. Hansen-Pruss, Durham, February 16, and by Colonel Lucke and Colonel Fitz-Hugh, February 17.

OHIO

Early Medical Illustrations.—Dr. Max E. Fisch, curator of the Army Medical Library, Cleveland Branch, will discuss "Early Medical Illustrations" at the Cleveland Museum of Art, March 19. The address will be illustrated with slides, selected largely from the rare book collection—incunabula and 16th, 17th and 18th century books—in the Army Medical Library.

Cancer Education Fund Established. — The Amos G. Barron Trust Fund will be set up by the Ohio division of the Women's Field Army, American Society for the Control of Cancer, the nucleus of which will be a $5,000 bequest of the late Mr. Barron, Cleveland, to the society. The income of the fund will be used for educational publicity on the prevention and cure of cancer.

Million Dollar Bequest Goes to New Foundation.—The Elizabeth Severance Prentiss Foundation will receive 1 million dollars by outright bequest under a special agreement drawn up by Mrs. Prentiss before her death, January 4. The

foundation was created by the late Mrs. Prentiss to promote medical and surgical research and public health and to aid in the support of local hospitals and health institutions and in planning for broader hospitalization and medical care. It was established Jan. 17, 1939 with the provision that its existence remain undisclosed until after her death (THE JOURNAL, January 29, p. 314). The gift of 1 million dollars is in addition to the 37 per cent interest in a fund of more than 8 million dollars left by Mrs. Prentiss for public welfare, cultural and educational purposes.

PENNSYLVANIA

James McKeen Cattell Dies. — James McKeen Cattell, Ph.D., widely known psychologist, educator, author and publisher of scientific articles, died January 20 at the Lancaster General Hospital, Lancaster, after a long illness. He was 83 years of age. Dr. Cattell had been editor of *Science* since 1894.

Philadelphia

Dr. Owen Becomes Director of Health for Education Board.—Dr. Hubley R. Owen, since 1940 director of health of Philadelphia, resigned January 1 to become director of the medical division of the board of education of the city.

Dr. Piersol Heads New Program in Physical Medicine.—Dr. George M. Piersol, professor of medicine in the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania, and a member of the Council on Physical Therapy of the American Medical Association, has been appointed director of the new Center for Research and Instruction in Physical Medicine in the graduate school of medicine of the university. The center was established by the National Foundation for Infantile Paralysis when a grant totaling $150,000 was given for a five year period from Jan. 1, 1944 to Dec. 31, 1948 (THE JOURNAL, Dec. 25, 1943, p. 1128). Dr. Piersol will relinquish his private practice to direct the center, one of whose objectives is to explore thoroughly the possibilities of physical means of treatment not only of infantile paralysis but of other diseases as well. Dr. Piersol graduated at the University of Pennsylvania School of Medicine in 1905, becoming a member of the faculty in 1907.

VIRGINIA

Physician Presents Monument to Lynchburg. — Dr. Rosalie Slaughter Morton, Winter Park, Fla., recently presented a monument to Lynchburg. The work of Brenda Putnam, the three figured monument personifies "Vision," "Fortitude" and "Kindliness" and is a gift to "the Sons and Daughters of Our City of the Hills."

Replicas of Surgical Instruments in Museum.—Personnel of the Eighth Evacuation Hospital, sponsored by the University of Virginia Department of Medicine, Charlottesville, now on duty in southern Italy, recently presented to the medical school a collection of 75 replicas of surgical instruments discovered in the ruins of Pompeii and Herculaneum. They will be on display in the medical library. The originals from which the reproductions were made are on exhibition in the National Museum of Naples. The reproductions, which were made by hand from the metal originally used, usually bronze, are the work of Cavalier Guglielmo Callo, 27 Piazzo Dante, Naples.

WEST VIRGINIA

Health Conference. — The annual West Virginia State Health Conference will be held at the Daniel Boone Hotel, Charleston, May 1-2. The program will be in charge of a committee composed of Dr. Albert M. Price, director of the Kanawha County Health Department, Miss Cecelia Robrecht, venereal disease nursing consultant, Charleston, and E. B. Carroll, sanitarian at West Virginia Training Center, Morgantown.

Personal.—Dr. Edgar H. Willard, Berkeley Springs, has been appointed as part time health officer for Morgan County. ——Dr. James M. Coram, Beckley, has resigned as director of the Raleigh County Health Department to engage in the practice of medicine at Edwight.——Dr. James C. Hutchinson, Welch, has been appointed acting superintendent of the Welch Emergency Hospital, succeeding Dr. Frank E. LaPrade, who is undergoing treatment at Pinecrest Sanitarium, Beckley.—— Dr. Robert D. Wright, former venereal disease consultant attached to the North Carolina State Board of Health, has been assigned as medical officer in charge of the new Kanawha Valley Medical Center at South Charleston. The unit, which was established by act of the 1943 legislature for the treatment of venereal patients, is located in the building formerly used as a NYA training school.

WISCONSIN

Lecture on Nutrition.—Dr. Ragnar Nicolaysen, professor of physiology of nutrition and director of the Institute of Nutrition Research, Oslo, Norway, lectured before the Wisconsin Medical Society January 19 on "Present Day Human Nutritional Problems." Dr. Nicolaysen recently attended the Food Congress of the Allied Nations at Atlantic City.

GENERAL

Cooperative Program for Postwar Hospitalization Needs.—The American Hospital Association has created a postwar planning committee to study postwar hospitalization needs of America. The two year program will be financed initially by grants of $35,000 each by the Kellogg Foundation and the Commonwealth Fund and $15,000 by the board of trustees of the American Hospital Association. The study will aim to determine the adequacy of distribution of present hospital facilities and the best method of insuring adequate hospital care for all citizens.

Fellowships Awarded.—The committee on medical education of the New York Academy of Medicine has awarded three of the four Charles Mayer Fellowships to Dr. Harry Goldblatt, professor of experimental pathology, Western Reserve University School of Medicine, Cleveland, the Cancer Research Laboratory of the Mount Sinai Hospital, New York, and John R. Murlin, Ph.D., professor of physiology, University of Rochester, Rochester, N. Y. The four fellowships of $2,000 for research on "the study of the relationship between precancerous lesions of the mouth, hepatic insufficiency and gastrointestinal disorders" will be held open for further applications until April 15. Applications should be sent to Dr. Mahlon Ashford, secretary of the committee, 2 East 103d Street, New York, not later than April 1.

Society of University Surgeons.—The sixth annual meeting of the Society of University Surgeons will be held at the Vanderbilt University Hospital, Nashville, Tenn., February 10-12. Among the speakers will be:

Dr. James W. Ward, Nashville, The Effect of Rapid Compression Waves on Animals Submerged in Water.
Mr. William F. Meacham, Nashville, Intrathecal Penicillin Therapy of Experimental Staphylococcic and Pneumococcic Meningitis.
Dr. Alexander Brunschwig, Chicago, Extending Surgical Attack on Cancer of the Colon.
Drs. Frederick A. Coller and Robert W. Buxton, Ann Arbor, Mich., Surgical Treatment of Deep Phlebitis of the Leg of Long Standing.
Drs. William J. German and Bernard S. Brody, New Haven, Conn., Compound Craniocerebral Injuries. Drs. Hilger Perry Jenkins and Joseph Garrott Allen, Chicago, Preparation and Use of Emollient Base Sulfathiazole Ointments.
Dr. Rollin A. Daniel Jr., Nashville, Gunshot Wounds of the Lungs.
Drs. John S. Lockwood, Charles E. Koop and Archibald G. Fletcher Jr., Philadelphia, Clinical Use of Gelatin as a Plasma Substitute.

Standards for Penicillin.—Since it is now the policy of the U. S. Pharmacopeia, with its continuous revision program, to recognize and standardize all important new drugs at the earliest possible date, it is to be expected that the Scope Subcommittee in the near future will accept penicillin as a U. S. P. item and ask the Committee of Revision to provide standards for it. Tentative but unofficial standards have been prepared by the cooperation of the manufacturers of penicillin, working with the Army, Navy, National Research Council, Food and Drug Administration and the War Production Board. All are helping to perfect these standards. At the present time the Food and Drug Administration, under these tentative methods, is checking all production of penicillin manufactured in this country for potency and safety for medicinal use before any lot is used medicinally. All tests as yet are in the development stage. The U. S. P., however, will give standards for penicillin legal status as soon as possible.

Society News.—The tenth annual meeting of the Mississippi Valley Medical Society will be held at the Pere Marquette Hotel, Peoria, Ill., September 27-28. Officers of the society include Drs. Charles Paul White, Kewanee, Ill., president, Grayson L. Carroll, St. Louis, president-elect and Harold Swanberg, Quincy, Ill., secretary-treasurer. —— The Association for Research in Ophthalmology will hold a meeting at the Hotel Sherman, Chicago, June 13. Applications for places on the program and all communications should be mailed to Major Brittain F. Payne, M. C., A. U. S., secretary of the association, School of Aviation Medicine, Randolph Field, Texas.——The Society of American Bacteriologists will hold its annual meeting at the Hotel Pennsylvania, New York, May 3-5, under the presidency of Rebecca C. Lancefield, Ph.D., New York.——The American Association of Cereal Chemists will hold its annual meeting at the Nicollet Hotel, Minneapolis, May 23-25.

The Devereux Award.—The first presentation of the Devereux Award of the American Psychiatric Association will take place at the meeting of the organization in Philadelphia in May. The establishment of the award was announced at the Detroit meeting May 12, 1943. The award is a competitive one, the subject of the competing essays to be on any phase of child psychiatry, including laboratory studies, psychologic analyses and approaches, biometrics, genetics, a clinical description and the therapeutics. To encourage research among the younger workers the contestants should be limited to persons having less than fifteen years of experience in the field, and no person having the rank of full professor or who is the head of an institution will be considered as a competitor for the prize. Except for these restrictions, the field is open to any one who has direct and personal experience in the field of child psychiatry. All papers must be submitted on or before March 1. They must be sealed and mailed to the American Psychiatric Association, Room 924, 9 Rockefeller Plaza, New York. All papers will become the property of the Devereux Schools, which established the award through the American Psychiatric Association, and may be used in any manner that they see fit. At the annual meeting in Philadelphia, May 15-18, the American Psychiatric Association will observe its 100th anniversary.

Meetings of Anesthetists.—The American Society of Anesthetists will be addressed at a meeting in New York, February 10, by Drs. Meyer Saklad, Providence, R. I., Noel A. Gillespie, Madison, Wis., and Emery A. Rovenstine, New York, on "Inhalation Therapy"; Leo V. Hand, Boston, "Subarachnoid Ammonium Sulfate Therapy," and Samuel A. Guttman, Philadelphia, "Spinal Cord Syndrome Following Intrathecal Ammonium Sulfate and Procaine—A Case Report with Autopsy Findings." At a meeting in Chicago February 18 the society will be addressed, among others, by Dr. Rovenstine on "The Present Status of Anesthesia" and Dr. Ralph M. Waters, Madison, "The Future Status of Anesthesia." Other speakers will include:

Dr. Hugh O. Brown, Chicago, Report of 200 Continuous Caudal Procedures.
Dr. Anderson C. Hilding, Duluth, Minn., The Relation of the Ciliary Mechanism to Postoperative Atelectasis and Certain Other Pathologic States in the Lower Respiratory Tract.
Lieut. W. Allen Conroy, M. C., A. U. S., The Combination of Pentothal Sodium and Nitrous Oxide for Anesthesia.
Dr. John S. Lundy, Rochester, Minn., The Management of Shock—The Problem for the Anesthetist.
Dr. Paul H. Holinger, Chicago, Endoscopic Cinematography of the Larynx, Tracheobronchial Tree and Esophagus.
Dr. Raymond B. Allen, Chicago, Undergraduate Teaching of Anesthesia.
Anton J. Carlson, Ph.D., Chicago, Some Unknown Physiologic Actions of Anesthetic Agents.

The program will also include a series of morning clinical meetings and round table discussions.

Diagnostic and Registry Center for Fungous Diseases of Man.—The American Foundation of Tropical Medicine has given a grant to the group of workers studying fungous infections at Duke University, Durham, N. C., to set up a diagnostic and registry center for fungous diseases of man. The service will include identification of fungi already isolated from patients suspected of having fungous disease and pathologic study and registry of biopsy and necropsy materials from patients suspected of having fungous infection. This is not to conflict with the diagnostic and registry services maintained by the several branches of the armed forces. A complete set of cultures of pathogenic fungi will be sent on request to any medical school for use in teaching courses in tropical medicine. To guarantee arrival of the fungi in proper state for study, it is necessary that requests for this material be sent at least one month prior to the time at which the cultures will be necessary for demonstration. By special arrangement, serologic tests will be done in certain of the fungous infections and vaccines for skin testing and therapeutic use in certain of the fungous infections will be sent on request. Specimens for pathologic study should be sent to Dr. Roger D. Baker, Duke Hospital, Durham, N. C. All other requests will be handled through the office of Dr. David T. Smith, Duke Hospital. Dr. Baker, who is associate professor of pathology at Duke University School of Medicine, announced that he would be pleased to receive any human pathology material showing disease due to fungi which have been removed by biopsy or at autopsy, in the form of microscopic sections, paraffin blocks or fixed tissues. Whenever possible, cultures of the fungus should be sent also as well as clinical data and photographs. Dr. Baker states that since his chief interest is the morbid anatomy and histopathology of fungous diseases he should like such material in the absence of accessory material. A definite etiologic diagnosis may be impossible in the absence of culture, he says. A report of his studies will be sent without charge to the contributor but rapidity of report cannot be guaranteed.

FOREIGN

Famine in Honan Province.—The school of medicine and dentistry of West China Union University, Chengtu, sent a medical unit of twenty-six doctors, dentists and nurses into Honan Province to assist in the famine there. The unit members traveled from Southwest China to Honan Province in two charcoal burning ambulances of the Friends' Ambulance Unit. Two public health centers were set up in Loyang under the direction of Bishop Thomas M. Megan of the Catholic Mission of Loyang, and a third unit was established in Changchow, the seat of some of the worst Honan famine suffering.

Rickettsia and Virus Laboratory Organized.—The development of a rickettsia and virus laboratory in China by the Chinese National Health Administration is going forward with the cooperation of the American Bureau for Medical Aid to China and United China Relief. Dr. Chen-Hsiang Huang, instructor in medicine and virus research, Columbia University College of Physicians and Surgeons, and fellow of the Rockefeller Institute for Medical Research, is en route to China to direct the work as head of the department of experimental medicine in the National Institute of Health. According to a release from United China Relief, at the present time there is no medical school or institution in China equipped to carry on virus research, and the rickettsia and virus laboratory will be the first of its kind in that country.

Great Britain's Health.—The general health of the British nation has continued good under the strains of war and, in some respects, is even better than in peacetime, according to a recent report which covers the year 1942. The report states that the birth rate was 15.8, the highest since 1931. The infant mortality rate was 49 per thousand live births compared with 59 in 1941, the first rate below 50 ever recorded for these statistics. The maternal mortality rate was 2.47 per thousand total births compared with 2.76 in 1941. The death for female civilians was 6.84 per thousand, 8 per cent better than any previous year, while the lowest rate for civilian males, 9.52, was recorded. The continued good health during wartime can be attributed to an adequate program of nutrition, it was stated. Tests of 4,500 persons of different ages and occupations showed evidence of deficiency disease in only 13 adults and adolescents and in only 2 school children. This study was supervised by Dr. Virgil P. W. Sydenstricker, professor of medicine, University of Georgia School of Medicine, Augusta, whose services were made available to the Ministry of Health through the International Health Division of the Rockefeller Foundation. Two surveys of the diet and planning of meals among working class families in specially chosen areas showed that about 10 per cent of the 600 persons examined were badly nourished, a result caused not because an adequate diet was unavailable but because years of poverty and unemployment had discouraged many people from maintaining a decent standard of housekeeping and cooking. A survey covering 1,500 families from North Scotland to the South Thames, made by Sir John Boyd Orr, revealed that, notwithstanding overcrowding and deterioration of medical services due to call-up of doctors, the health of wage earning classes is better than before the war. The report emphasizes the increase in the incidence of respiratory tuberculosis and venereal disease, although the total number of deaths from all kinds of tuberculosis was 25,547, about 2,500 less than in 1940, 3,000 less than in 1941 and about the same as in the last prewar year 1938, which was the lowest total on record. The number of civilian and service patients attending syphilis treatment centers for the first time represented an increase of 29.6 as compared with 1941; the rise of 1941 over increase of 1940 was 40 per cent. The increase in new syphilitic infections since the beginning of the war now amounts to 120 per cent, it was stated. Figures of civilian infections of gonorrhea are not available, but, taking service statistics as a guide, it is estimated that during 1942 new infections of gonorrhea have been from six to seven times as many as those of syphilis. In November 1942 the government inaugurated compulsory treatment for those who refused to take voluntary care.

CORRECTION

Membership of Dr. Lowe.—The obituary of Dr. Edwin H. Lowe, Maryville, Tenn., should have contained the fact that he was a member of the Tennessee State Medical Association. In error, THE JOURNAL, January 15, page 186, reported that Dr. Lowe was a member of the Medical Society of the State of Pennsylvania.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 1, 1944.

The Education and Training of Blinded Soldiers in German Prison Camps

The education and training of men in German prison camps have been described in a previous letter, and something may now be said about the special case of blinded prisoners. When the initial shock of their catastrophe had been overcome, the men began to realize that a long period of education by new methods would be necessary for them to be able to take their place beside seeing workers. At least the beginning of their long reeducation, it was felt, might be completed during their prison life. Ultimately, owing to the efforts of the Young Men's Christian Association, the blinded men were collected in one center. The German authorities were sympathetic toward this work. A braille school was started. The braille alphabet was picked out on a piece of cardboard with matches and pins. Then material and assistance came from St. Dunstan's, the British institution for blinded service men established during the war of 1914-1918. Three volunteer teachers were obtained for typewriting, music and commercial correspondence. One was an Australian Air Force sergeant, another a New Zealand sergeant of the Army Medical Corps and another a corporal. The untiring work and encouragement of these teachers produced constructive results. Proficiency was reached in reading and writing braille and in typewriting. The curriculum of the braille school was then enlarged to include braille shorthand, elementary English, geography and science, elementary economics and commercial correspondence. For recreation, a band of sixteen members was formed. The majority had never played a musical instrument before, but after months of hard practice three concerts were given in the camp. By their persistent determination the men reached a stage of proficiency in all the fundamentals of education necessary for a blind man, and they will be able to start their final training at St. Dunstan's on returning to England.

Government Commission to Investigate the Birth Rate

The government has decided to set up a commission to investigate the birth rate and trends of population. The chairman will be Lord Simon, the lord chancellor. The specific functions of the commission are to examine the facts relating to present trends of population in Great Britain, to investigate the causes of these trends and consider the probable consequences; to consider what measures, if any, should be taken in the national interest to influence the future trend of population and to make recommendations. A number of inquiries of a technical kind are to be undertaken immediately.

In an editorial the *Times* declares that no subject could be of greater importance or more worthy of official attention and national action. Britain, in common with all western Europe and indeed with most white peoples of the world, has reached a turning point of history. The great expansion of the white races, which began some three hundred years ago and reached its climax in the 19th century, is, on all present evidence, drawing to an end. The continuance of trends which have now prevailed for well over a generation, through prosperity and depression and peace and war alike, will halt the growth of population in Europe within the next thirty years. Within the same period, population growth may be expected to cease in Australia and New Zealand. Canada and the United States are not likely to lag far behind. But the Soviet Union, which is demographically in the position of Britain one hundred years ago, can expect a rapid expansion of numbers throughout the coming generation. It may be conceded that a stationary population in Europe, the British dominions and North America would bring many advantages. The multiplication of the human race must one day come to a halt, and the halt may present an opportunity for great improvement in economic and social well-being. Yet crucial problems remain. The expansion of the white peoples was achieved by a great reduction in death rates. This was followed, within living memory, in most countries, by a great reduction of the birth rate, which is bringing the increase of population to an end. But in western Europe the decline of fertility has gone well beyond the point necessary for maintenance of the population. A bad result of the decline of the birth rate in this country is a steady rise in the average age of the population. In less than thirty years the proportion of persons of pensionable age is likely to increase from 12 per cent today to 21 per cent. The proportion of children under 15 may fall from 21 to 16 per cent. Thus the burden of supporting the aged and the infirm will increase.

Reform in the Training of Nurses

Far reaching recommendations for nursing education are made in the report of the Reconstruction Committee of the Royal College of Nursing, presented by the chairman, Lord Horder, to the minister of health. An important proposal is that greater emphasis should be laid on the status of the student nurse. In the past she has been regarded largely as "cheap labor" and not as a professional trainee. In a foreword to the report Lord Horder states that the training of the nurse, in spite of minor improvements, is still too haphazard and is maintained under handicaps with which no true educational movement should be faced. It is suggested that instead of being paid during training the student nurse should pay for her training—a step which Canada took many years ago with most successful results. This would put her on the same footing as students training for other professions. If necessary to ensure that no suitable candidate should be lost to the profession through inability to pay the fee, it is recommended that free places with maintenance grants should be available. The nation should make a financial contribution to its nurses, as it does to the education of teachers, physicians and other professional workers.

The committee recommends that grants be made from national funds to all recognized training hospitals, because of the national importance of the training of nurses, and suggests the setting of standards below which no training program can fall without forfeiting its status. Boards of hospitals must regard themselves as educators; training hospitals should adopt a wider basic training on the "block system," whereby the student has alternate periods of practical and theoretical instruction. Thus the strain of lectures taken in off duty time or at the end of a busy day or night might be avoided.

Industrial Rehabilitation Center

The war has of course given rise to a good deal of disablement in the civil population as well as in the fighting forces. The minister of health has established at Egham, Surrey, a residential center for the purpose of assisting the early return to work of men who, after receiving inpatient treatment in the hospital or after completion of other medical treatment, need a period of reconditioning in order to make them fit to resume full time employment in their usual occupation or to take up a full time course of vocational training for another occupation. The objects of the center are, first, to restore confidence and mental and physical fitness by exercises and healthy indoor and outdoor occupations and, second, to test suitability for a particular occupation or course of training. The courses are intended primarily for men between the ages of 18 and 50, though those above or below these limits may occasionally be admitted when vacancies occur. Foreigners and dominion nationals are admitted provided they satisfy certain conditions.

German and Japanese Maltreatment of Women

The German and Japanese maltreatment of women under their rule is described in reports of conditions in occupied countries issued by the Inter-Allied Information Committee. Great care has been taken and much restraint exercised so that the record, if anything, is an understatement. Enemy bestiality reaches its lowest depths, perhaps, in Russia, Poland and China. In Poland there has been wholesale seizure of girls and young women to be sent to brothels for soldiers. Executions are an essential feature of the oppression. It is estimated that in Czechoslovakia 170 to 180 women lost their lives for alleged political offenses between May 28 and July 3, 1943. In Crete many civilians were executed for the alleged offense of "unlawfully" taking part in the fighting. Their wives, children and other relatives were not only forced to be present at the execution and to dig the graves but they also had the executioners billeted on them and were compelled to cook and keep house for them.

BRAZIL

(From Our Regular Correspondent)

Dec. 30, 1943.

Vital Statistics of the Brazilian Cities

We are yet far from an approximate idea of the vital statistics situation of the whole population of Brazil, as the enormous size of the country, the lack of facilities of communication and the relative backwardness of several sections represent important difficulties to be overcome. For a few years the National Department of Health has been making great efforts to stimulate the development of state and local public health organizations, one of the functions of which is the registration and collection of vital statistics. Statistical information for the principal cities of the country, which, unlike those in the United States are as a rule the capitals of the twenty states, is beginning to be compiled on a basis making it feasible now to examine the main facts which they present. With the exception of a half dozen capitals, all the other fourteen are cities of a hundred thousand or more population. Six of them have more than 200,000 population: Belém, 209,000, Belo-Horizonte 215,000, Porto Alegre 280,000, Salvador 295,000, Recife 355,000 and São Paulo 1,320,000. Adding the population of these twenty cities to that of the capital of the country (Rio de Janeiro, 1,840,000 inhabitants), we have an aggregate of 5,670,000 population the demographic situation of which may be studied through the statistical returns for 1942, now available.

For this aggregate of population, which represents about 13 per cent of the number of inhabitants of the whole country, 161,028 births have been registered during the year 1942, which corresponds to the annual birth rate of 28.4 per thousand of population. Similarly, during the same period, 124,173 deaths have been registered, corresponding to the annual death rate of 21.9 per thousand. There is a significant difference between the annual death rate for the group of northern, tropical cities of Brazil, and for the southern, subtropical, and more advanced cities: 24.3 per thousand for the former and 16.5 per thousand for the latter. The diseases of the digestive system formed by far the most important group of causes of death, with a specific crude death rate of 509.4 per hundred thousand, or 23.3 per cent of the total mortality. For the northern cities the death rate was 695.3 per hundred thousand and for the southern cities 313.6 per hundred thousand. Tuberculosis was the second most important cause of death, with the annual death rate of 280.3 per hundred thousand for the whole group of cities, or 12.8 per cent of the total mortality. There was practically no difference between the death rate from tuberculosis for the northern and for the southern cities. Malaria was an important cause of death, as the annual death rate for the whole group of cities was 69.8 per hundred thousand, or 3.2 per cent of the total mortality. There was a striking difference between the incidence of this disease in the northern and the southern cities: 108.5 deaths per hundred thousand for the former and only 16.5 for the latter. Dysentery, measles, typhoid and whooping cough had a relatively high incidence, as the annual death rates from these causes were respectively 21.1, 21.1, 15.7 and 12.0 per hundred thousand, diphtheria having a relatively low incidence, as the death rate was 6.3 per hundred thousand, with only a slight difference between the several cities. Cancer was the cause of 2,960 deaths, corresponding to the annual death rate of 52.2 per hundred thousand. As reported in THE JOURNAL, June 12, 1943, cancer mortality is much higher in the southern than in the northern cities of Brazil, for 1942 the death rates being respectively 73.1 and 39.4 per hundred thousand. The death rates for the diseases of the circulatory, the respiratory and the nervous systems respectively were 233.0, 149.1 and 68.1 per hundred thousand. For the whole group of cities the maternal death rate was 10.3 per hundred thousand, showing a large range of variation, from 3.8 for progressive São Paulo in southern Brazil to 17.9 for backward Manaos in the equatorial Amazon valley.

Adrenogenital Syndrome in Adrenal Carcinoma

Dr. Salgado of Belo-Horizonte reported a rare case of adrenogenital syndrome caused by adrenal carcinoma in a woman. The diagnosis was made by air insufflation of the perirenal region. The clinical features were impressive: hirsutism, muscular development, acne, hypertrophy of the clitoris, amenorrhea, atrophy of the uterus and hypertension. The tumor, having the size of an infant's head and weighing 600 Gm., was excised through an incision in the lumbar region. Pathologic examination revealed adrenal carcinoma, microcystic degeneration of both ovaries and cystic endometrium at rest. Using high doses of estrogens, 1,000,000 international units in sixty days, it was possible to release the inhibitory effect of the tumor on the endometrium. Tumors of the adrenal cortex can be successfully removed, the author says, and the operation is often life saving.

Marriages

LEO E. PETERS, Little Rock, Ark., to Miss Ruby Christine Irwin of DeQuincy, La., at Shreveport, La., January 22.

ARTHUR H. ULMER JR., Toledo, Ohio, to Miss Betty Key of Ferndale, Mich., in Ann Arbor, Mich., December 30.

JOSEPH B. LONGINO, Sulphur Springs, Texas, to Miss Joan Schultz of Grand Rapids, Mich., recently.

GEORGE GORDON CULBRETH, New Bern, N. C., to Miss Mary Fern Coble of Durham, December 21.

GERHARD HERMAN BAUER to Miss Dorothy Wiedman, both of Ann Arbor, Mich., January 1.

HARRISON F. HARBACH, Gettysburg, Pa., to Miss Suzanne Heiges of Harrisburg, January 1.

JOHN ROBERT EGAN, Pierre, S. D., to Miss Marjorie Sampsell of Essex, Conn., January 18.

VINCENT EDWARD ROMANO, Newark, N. J., to Miss Mary Spann at Far Hills, January 5.

HUGH ARCHIE MATTHEWS to Miss Ruth Burch, both of Canton, N. C., December 28.

EVERETT W. GAUNT, Indianapolis, to Miss Betty Lou Brown of Franklin, Ind., January 2.

RICHARD LEWIS BODKIN to Miss Marie Kathleen Hamann, both of Brooklyn, January 8.

GERALD E. FISHER, Lebanon, Ind., to Miss Bonlyn Stone of Indianapolis, November 7.

JACKSON E. KRESS to Miss Kathryn Norton, both of Sayre, Pa., December 18.

JULIUS L. ROGOFF to Miss Stella Faw, both of New York, recently.

Deaths

Harry Lorenzo Gilchrist ✠ Major General, U. S. Army, retired, Washington, D. C.; Western Reserve University Medical Department, Cleveland, 1896; an honor graduate and medalist of the Army Medical School in 1903; a contract surgeon with the U. S. Army from 1898 to 1900; entered the medical corps of the U. S. Army as an assistant surgeon in 1900; was made a captain in 1905, a major in 1909, a lieutenant colonel in 1917, colonel in 1926 and major general in 1929, when he became chief of the chemical warfare service; retired from the latter position in 1933 and from active duty in the army Jan. 31, 1934; formerly head of the medical research laboratory, chemical warfare service, Edgewood Arsenal, Md., and later chief of the medical research division in the office of the chief, chemical warfare service, in Washington, D. C.; health officer at Manila in 1900; organized a field hospital following the San Francisco earthquake in 1906; in 1917 was placed in command of Base Hospital number 4, organized from Western Reserve University, the first unit of the American troops to go to Europe; as British General Hospital number 9 at the front, the unit was commanded by him until December 1917, when he was made medical director of the chemical warfare service with the American Expeditionary Forces; in 1919 in command of the American Typhus Relief Expedition to Poland, where he remained for two years during the war of Poland with the Bolsheviki; one of four officers of the medical corps who had been assigned to military duty as a general officer and chief of branches outside the medical department; fellow of the American College of Surgeons; president of the Association of Military Surgeons of the United States, 1933-1934; a member of the International Medical Club, Army and Navy Club of Washington; an honorary professor of Polish Army Medical School and an honorary member of the Mexican Association of Military Surgeons; awarded the Distinguished Service Medal, Purple Heart, General Service Medal (Great Britain) Legion of Honor and Medaille d'Honneur Epidemics (France), Cross of the Valiant and Commander Order of Polonia Restituta (Poland), Order of Star of Abdon Calderón (Ecuador), Spanish-American War Decoration (Cuba) and campaign medals for the Spanish-American War, the Philippines, Cuba, Mexican Border and World War I; cited in special orders by Field Marshal Sir Douglas Haig and by General Pershing for "especially meritorious service with chemical warfare service"; editor of the *Military Surgeon* from 1934 to 1940; died in the Walter Reed General Hospital December 26, aged 73, of arteriosclerosis.

Paul Keller ✠ West Allenhurst, N. J.; Jefferson Medical College of Philadelphia, 1917; senior medical officer in the navy and honorably cited for service during World War I; for many years executive director of the Newark Beth Israel Hospital; served on the Emergency Relief Administration of the New Jersey Administrative Council in 1934 and in the same year was named medical director of the Bankers Indemnity Company of New Jersey; in 1935 named director of the Newark Bureau of Industrial Hygiene; when the Association of Industrial Physicians and Surgeons of New Jersey was organized in 1938, was chosen acting secretary; instrumental in organizing the Essex County Hospital Council; served as staff surgeon for the Pennsylvania Railroad; member of the executive committee of the University of Newark; past president of the New Jersey Hospital Association; vice president and medical director of Associated Hospital Service of New York; died December 22, aged 52, of heart disease.

Karlton Goodsell Percy, Boston; Harvard Medical School, Boston, 1911; specialist certified by the American Board of Pediatrics, Inc.; member of the Massachusetts Medical Society, American Academy of Pediatrics and the New England Pediatric Society; formerly assistant in pediatrics at his alma mater; consultant in pediatrics at the Charles Choate Memorial Hospital, Woburn, Chelsea Memorial Hospital, Chelsea, Symmes Arlington Hospital, Arlington, and the Winthrop Community Hospital, Winthrop; was instantly killed by the accidental discharge of his shotgun when he stumbled over a wire, November 15, aged 57.

Samuel Herbert Geist ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1908; clinical professor of gynecology at his alma mater; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; member of the American Gynecological Society; past president of the New York Obstetrical Society; fellow of the American College of Surgeons; served as a captain in the medical corps of the U. S. Army with the American Expeditionary Forces in France; on the staff of the Mount Sinai Hospital; author of "Ovarian Tumors"; died December 14, aged 58, of hypertension.

Max Biesenthal ✠ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; specialist certified by the American Board of Internal Medicine; formerly a director of the National Tuberculosis Association and a member of the executive board of the Chicago Tuberculosis Institute; served as president of the Mississippi Conference on Tuberculosis; formerly attending physician, Cook County Hospital; on the staff of the Michael Reese Hospital; medical director of the Winfield Sanatorium, Winfield, Ill.; died January 20, aged 61, of coronary thrombosis.

Frank West Allen, Houston, Texas; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1900; member of the State Medical Association of Texas; died in the Heights Clinic-Hospital recently, aged 69, of cardiac asthma.

Napoleon J. Atkinson, Greenville, Texas; Meharry Medical College, Nashville, Tenn., 1895; a member of the chamber of commerce; died in Texarkana November 30, aged 70.

Tracy Wentworth Blachley ✠ Chicago; Northwestern University Medical School, Chicago, 1907; served in the medical corps of the U. S. Army during World War I; member of the staff, Illinois Masonic Hospital; died December 21, aged 59, of Hodgkin's disease.

James Maurice Bowman, Columbus, Ohio; Ohio State University College of Medicine, Columbus, 1916; served during World War I; on the staff of the Grant Hospital, where he died November 21, aged 65.

Thomas Franklin Branson, Rosemont, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1892; member of the Medical Society of the State of Pennsylvania; served as physician in chief for the Bryn Mawr College and Shipley School, Bryn Mawr; on the staff of the Bryn Mawr Hospital; died in Philadelphia December 8, aged 74, of arteriosclerosis.

Clement W. K. Briggs, Chicago; National Medical University, Chicago, 1906; on the staffs of the Cuneo Hospital and the Columbus Hospital, where he died December 22, aged 62, of carcinoma of the lung.

Thomas Oscar Brown, Osage City, Kan.; University Medical College of Kansas City, Mo., 1897; for many years owner of the Brown Hospital; died in the University of Kansas Hospitals, Kansas City, November 12, aged 74.

Oliver Franklin Carr, Clarksdale, Miss.; University of the South Medical Department, Sewanee, Tenn., 1903; member of the Mississippi State Medical Association; formerly superintendent of the State School for the Blind, Jackson; died in the Baptist Memorial Hospital, Memphis, Tenn., December 4, aged 63.

Jay Russell Coffey ✠ Portland, Ore.; University of Oregon Medical School, Portland, 1923; served in France during World War I; died suddenly November 29, aged 49.

William Walter Cummings, Providence, R. I.; Johns Hopkins University School of Medicine, Baltimore, 1916; member of the Rhode Island Medical Society; served as a captain in the medical corps of the U. S. Army during World War I; on the staffs of the Homeopathic and the Charles V. Chapin hospitals; died December 4, aged 53, of heart disease.

Moses Green Daly, Little Rock, Ark.; University of Arkansas School of Medicine, Little Rock, 1912; member of the Arkansas Medical Society; on the staffs of the Baptist State Hospital, University Hospital and St. Vincent's Infirmary; died December 12, aged 64, of pneumonia.

John William Daugherty, Chillicothe, Ill.; Rush Medical College, Chicago, 1900; member of the Illinois State Medical Society; died in St. Francis Hospital, Peoria, November 30, aged 69, of carcinoma of the cecum.

E. Ellsworth Dell ✠ Sand Lake, Mich.; Illinois Medical College, Chicago, 1900; served as a member of the village council and the school board; on the staff of the Blodgett Memorial Hospital, Grand Rapids; instantly killed December 18, aged 72, in an automobile accident.

Clarence Dillard Jr., Goldsboro, N. C.; University of West Tennessee College of Medicine and Surgery, Memphis, 1912; died December 19, aged 56, of cardiac decompensation.

Felix Albert Dolan, Sheridan, Wyo.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900; member of the Wyoming State

Medical Society; formerly served as county health officer; on the staff of the Sheridan County Memorial Hospital, where he died December 4, aged 70, of coronary thrombosis.

Edmund LeRoy Dow, Palm Beach, Fla.; College of Physicians and Surgeons, New York, 1895; died December 1, aged 73.

Lewis Walton Dudley, Milwaukee; Northwestern University Medical School, Chicago, 1893; served as a captain in the medical corps of the U. S. Army during World War I; formerly superintendent of the Wisconsin State Sanatorium, Statesan; died in St. Agnes Hospital, Fond du Lac, Wis., December 3, aged 76, of carcinoma of the colon.

Benjamin Franklin Elliott, Moundville, Ala.; University of Alabama School of Medicine, 1912; member of the Medical Association of the State of Alabama; served on the staff of the City Hospital, Mobile; died December 1, aged 57.

Joseph Yancy Freeman, Lafayette, Tenn.; University of Tennessee Medical Department, Nashville, 1910; member of the Tennessee State Medical Association; also a minister; died December 20, aged 71, of coronary occlusion.

Cornelius Edward Geary ⊕ Fitchburg, Mass.; Harvard Medical School, Boston, 1907; died December 6, aged 63.

Francis Otto Geisler ⊕ Isabella, Tenn.; University of Nashville Medical Department, 1908; secretary and treasurer of the Polk County Medical Society for many years; died in Chattanooga November 18, aged 62.

John N. George, Centerville, Ark.; Memphis (Tenn.) Hospital Medical College, 1899; formerly served as county judge, sheriff and state senator; died in a Russellville hospital November 4, aged 65.

Herbert F. Gillette, Woodbury, Conn.; College of Physicians and Surgeons, Buffalo, 1882; for many years a ship surgeon, and surgeon for the Erie Railroad; died in the Danbury Hospital, Danbury, December 21, aged 87, of heart disease.

Israel Grushlaw, New York; University of Pennsylvania Department of Medicine, Philadelphia, 1899; member of the Medical Society of the State of New York and the American Academy of Ophthalmology and Otolaryngology; on the staff of the Lebanon Hospital; died December 9, aged 67, of heart disease.

Joseph Edward Hallisey, Boston; Tufts College Medical School, Boston, 1908; professor of clinical medicine at his alma mater; served as physician in chief of the first medical service and chief of the cardiac clinic, Boston City Hospital; past president of the Boston City Hospital Alumni Association; died November 18, aged 60, of cardiac decompensation due to arteriosclerotic heart disease.

John Henry Harms, Newton, Kan.; University Medical College of Kansas City, Mo., 1892; member of the Oklahoma State Medical Association; died November 25, aged 84.

James Vance Harsha, Houston, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1896; served during World War I; honorary member of the medical staff of the Canonsburg General Hospital, Canonsburg; died in the Veterans Administration Facility, Aspinwall, December 10, aged 72, of bronchopneumonia.

Arthur John Hart ⊕ Major, U. S. Army, retired, Jersey City, N. J.; Georgetown University School of Medicine, Washington, D. C., 1936; also a dentist; entered the U. S. Army in 1910; commissioned a first lieutenant in the dental corps in June 1917 and promoted to major in October 1917; retired in June 1920 for disability in line of duty; resident in radiology at the Medical Center of Jersey City, where he died December 22, aged 55, of hypertensive heart disease and bronchopneumonia.

Harry Fairbanks Hartwell ⊕ Weston, Mass.; Harvard Medical School, Boston, 1898; for many years instructor in surgery at his alma mater; served with the first Harvard unit in the British Medical Corps during World War I; formerly surgical pathologist for the Massachusetts General Hospital; died December 7, aged 69.

William D. Henderson, Hamilton, Ill.; Starling Medical College, Columbus, 1878; died December 16, aged 80.

Henry Hertzler, Jenners, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1901; died December 4, aged 76.

Hinson Duncan Hicks ⊕ Clinton, Tenn.; University of Louisville (Ky.) Medical Department, 1900; served as a member of the city board of education and a member of the board of pension examiners; died suddenly, December 6, aged 67.

Andrew Jack Hoefer, San Diego, Calif.; University of Kansas School of Medicine, Kansas City, 1932; member of the California Medical Association; died in the Mercy Hospital December 3, aged 43, of cirrhosis of the liver.

Adolph F. Hofkin, Philadelphia; Medico-Chirurgical College of Philadelphia, 1900; died December 12, aged 68.

James W. Holmes, West Point, Miss.; Meharry Medical College, Nashville, Tenn., 1892; died recently, aged 86.

Harry Walter Houf Sr. ⊕ Minturn, Colo.; University of Missouri School of Medicine, Columbia, 1908; died December 3, aged 68, of coronary thrombosis.

Myrtle Belle Hudson, Pacific Grove, Calif.; American Medical Missionary College, Battle Creek, Mich., and Chicago, 1907; died November 8, aged 78.

Frank Hasson Ikirt, East Liverpool, Ohio; Baltimore Medical College, 1907; died in the Ohio Valley General Hospital, Wheeling, December 6, aged 69, of heart disease.

Roland Jessop, Oil City, Pa.; Jefferson Medical College of Philadelphia, 1892; member of the Medical Society of the State of Pennsylvania; served as secretary and president of the York County Medical Society and the York Medical Club; for two years health officer of York; chairman of the crippled children's committee of the Rotary Club; served as chief of the orthopedic department, York Hospital; died November 30, aged 73, of diabetes mellitus and arteriosclerosis.

Edward Healey Kelly, Scranton, Pa.; Medico-Chirurgical College of Philadelphia, 1909; member of the Medical Society of the State of Pennsylvania; died December 9, aged 67, of coronary thrombosis.

Edward Anthony Kennedy ⊕ Pittsfield, Mass.; University of Vermont College of Medicine, Burlington, 1905; on the staffs of St. Luke's Hospital, Hillcrest Hospital and the House of Mercy; died December 14, aged 63, of coronary occlusion.

Cleve Edwin Kindall ⊕ Los Angeles; University of Colorado School of Medicine, Denver, 1911; served during World War I; at one time affiliated with the U. S. Public Health Service and the U. S. Bureau of Mines; for many years district surgeon for the Standard Oil Company of California; member of the medical staff of St. Vincent's Hospital, where he died December 11, aged 55, of Hodgkin's disease.

Oren B. C. Kinney, Cody, Wyo.; University of Vermont College of Medicine, Burlington, 1890; member of the Wyoming State Medical Society; died November 10, aged 77.

George Wallace Kirk ⊕ Shepherdsville, Ky.; Hospital College of Medicine, Louisville, 1883; served as a member of the local board of health; died December 6, aged 82.

Henry John Kohlmann, Brooklyn; Long Island College Hospital, Brooklyn, 1907; member of the Medical Society of the State of New York; on the staffs of the Cumberland, Swedish, Mather Memorial and Methodist hospitals; member of the Selective Service; died December 18, aged 61, of coronary heart disease.

John William Lane, Boston; Harvard Medical School, Boston, 1903; member of the Massachusetts Medical Society; assistant demonstrator of anatomy at the Tufts College Medical School from 1905 to 1908; assistant in surgery, courses for graduates, Harvard Medical School, from Sept. 1, 1912 to Sept. 1, 1915; served during World War I; served on the staffs of St. Margaret's, St. Elizabeth's and the Boston City hospitals; died December 3, aged 66, of heart disease.

Henry Wilson Lattin, Albion, N. Y.; University of Buffalo School of Medicine, 1895; died December 23, aged 75.

Charley S. Laws, Texarkana, Ark.; Gate City Medical College, Texarkana, 1905; member of the Arkansas Medical Society; died in a local hospital November 24, aged 66.

Alfred Leighton Marks, Spokane, Wash.; Trinity Medical College, Toronto, Ont., Canada, 1900; died in December, aged 63.

Joseph Ray Horatio McDaniel ⊕ East Fultonham, Ohio; Ohio Medical University, Columbus, 1902; at one time vice president of the Muskingum County Academy of Medicine; formerly county coroner; died December 14, aged 63.

Clarence Willson McElhaney, Greenville, Pa.; Western Reserve University Medical Department, Cleveland, 1893; member of the Medical Society of the State of Pennsylvania; fellow of the American College of Surgeons; on the staff of the Greenville Hospital; died November 25, aged 74, of coronary thrombosis.

James William McLaughlin, Rossville, Ill.; Ensworth Medical College, St. Joseph, Mo., 1893; died in St. Elizabeth Hospital, Danville, December 6, aged 76, of carcinoma of the esophagus.

Joseph Franklin McNew, Farmersville, Texas; Dallas Medical College, 1904; veteran of the Spanish-American War; died in Dallas November 23, aged 67, of cerebral hemorrhage.

William Henry Mick, Cleveland; John A. Creighton Medical College, Omaha, 1903; member of the American Roentgen Ray Society; served with the Cornell evacuation hospital unit in France during World War I; on the staff of the Huron Road Hospital, East Cleveland; died December 9, aged 66, of coronary thrombosis.

Edwin A. Milligan, Scottsville, Ark. (licensed in Arkansas in 1903); also a minister; died in a Little Rock hospital November 24, aged 78.

John Edward Morgan, Oskaloosa, Iowa; Keokuk Medical College, 1892; served during World War I; designated examiner for the Veterans Administration for many years; died December 6, aged 78, of diabetes mellitus.

Clement Morris, Newark, N. J.; University of the City of New York Medical Department, New York, 1889; member of the Medical Society of New Jersey; a member of the staffs of St. James and Presbyterian hospitals; died November 21, aged 78, of heart disease.

Robert J. Morton, Clay Center, Kan.; College of Physicians and Surgeons of Chicago, 1883; member of the Kansas Medical Society; served in the state legislature as a representative from his district; died December 3, aged 85, of bronchopneumonia.

Henry Allen Moyer ✠ Charlotte, Mich.; Detroit College of Medicine, 1901; since 1939 commissioner, Michigan Department of Health, Lansing; served as medical secretary and personal physician to the late Governor Dickinson of Michigan; past president of the Eaton County Medical Society; member of the American Public Health Association; formerly health officer of Eaton County; died in St. Joseph's Mercy Hospital, Ann Arbor, January 6, aged 67.

Joseph White Murphey, Monroe, La.; University of Nashville (Tenn.) Medical Department, 1908; member of the Louisiana State Medical Society; on the staffs of the E. A. Conway Memorial Hospital and St. Francis' Sanitarium, where he died December 9, aged 66, of pericarditis.

George Louis Nichols, Stafford Springs, Conn.; New York Homeopathic Medical College and Hospital, New York, 1893; a member of the Rotary Club; died in the Cyril and Julia C. Johnson Memorial Hospital December 15, aged 72.

Grover C. Nickell, Morehead, Ky.; Kentucky University Medical Department, Louisville, 1906; member of the Kentucky State Medical Association; for many years physician for the Morehead State Teachers College; died December 16, aged 59, of hypertensive heart disease and lobar pneumonia.

Joseph B. Norman ✠ Tipton, Mo.; Hospital College of Medicine, Louisville, Ky., 1894; died in Rochester, Minn., December 11, aged 79, of post-prostatectomy anuria.

Charles Sumner Orris ✠ Tarentum, Pa.; University of Pittsburgh School of Medicine, 1907; served during World War I; member of the board and on the staff of the Allegheny Valley Hospital; director, Peoples National Bank, and the Peoples Federal Savings and Loan Association; died in the Johns Hopkins Hospital, Baltimore, December 16, aged 63.

Charles Eugene Padelford ✠ Holley, N. Y.; University of Buffalo School of Medicine, 1905; served as health officer of Clarendon, Murray, Holley and Kendall; school physician; formerly county coroner; first president of the Rotary Club; died in the Highland Hospital, Rochester, December 6, aged 74.

Orlando Patton, League City, Texas; Memphis (Tenn.) Hospital Medical College, 1902; member of the State Medical Association of Texas; died in Galveston November 21, aged 62, of cerebrovascular accident and coronary heart disease.

Stuart Zeno Peoples ✠ Petaluma, Calif.; University of California Medical Department, San Francisco, 1904; served during World War I; formerly health officer and city physician; for many years a member and president of the board of education; died November 16, aged 65.

LIEUT. COMDR. JAMES G. NEFF (MC) U. S. Navy, 1904-1943

Herman Clarence Riggs, Brooklyn; College of Physicians and Surgeons, New York, 1890; died December 10, aged 78, of senility.

Marion William Rogers ✠ Leon, Iowa; University Medical College of Kansas City, Mo., 1908; secretary and past president of the Decatur County Medical Society; city health officer; for three terms county coroner; secretary of the staff, Decatur County Hospital; died December 7, aged 67, of cerebral hemorrhage.

Hugh Daniel Schell, Hamilton, Ohio; Hahnemann Medical College and Hospital of Philadelphia, 1906; member of the Ohio State Medical Association; died December 14, aged 64.

Louis Schwarz, Philadelphia; Jefferson Medical College of Philadelphia, 1881; died in the Mount Sinai Hospital December 17, aged 82, of carcinoma of the stomach.

A. Macrae Smith ✠ Bellingham, Wash.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1898; fellow of the American College of Surgeons; chief of staff, St. Joseph's Hospital; senior surgeon in reserve of U. S. Public Health Service; served as surgeon for the Northern Pacific Railway; died November 20, aged 69, of heart disease.

Wesley Allan Sorenson, Denham Springs, La.; Louisiana State Medical Center, New Orleans, 1937; member of the Louisiana State Medical Society; died December 3, aged 33.

Walter King Stewart ✠ Sandusky, Ohio; Jefferson Medical College of Philadelphia, 1924; past president of the Mahoning County Medical Society; medical director of the Plum Brooks Ordnance Works; died in the University Hospitals of Cleveland, December 16, aged 44, of pneumococcus meningitis, type III.

John Thomas Sullivan Jr., Boston; Harvard Medical School, Boston, 1897; member of the Massachusetts Medical Society; formerly school physician; served on the staffs of the Carney and St. Elizabeth's hospitals and the Boston Sanatorium; died December 10, aged 70, of Parkinson's disease.

John B. Swabey, Muskegon, Mich.; Atlanta Medical College, 1895; died December 22, aged 72, of carcinoma of the prostate and bladder.

Howard Eugene Truex, San Antonio, Texas; American Medical Missionary College, Battle Creek, Mich., and Chicago, 1901; died November 26, aged 66, of cirrhosis of the liver.

Luther A. Walker, Harveyville, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1899; formerly a druggist; died in St. Francis Hospital, Topeka, November 15, aged 75.

Horace O. Williams. Lansdale, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1899; member of the Medical Society of the State of Pennsylvania; member of the board of health; a charter member and past president of the Rotary Club; a director of the First National Bank; died in the Chestnut Hill Hospital, Philadelphia, November 28, aged 68, of coronary disease.

KILLED IN ACTION

James Gaylord Neff ✠ Surgeon, Lieutenant Commander, U. S. Navy, Sterling, Neb.; Loyola University School of Medicine, Chicago, 1930; U. S. Naval Medical School, 1933; commissioned a lieutenant (jg) in the medical corps of the U. S. Navy in June 1929; awarded the Purple Heart, the American Defense Service Medal, the Second Nicaraguan Campaign Medal, the American Campaign Medal, the European-African-Middle Eastern Campaign Medal and the Asiatic-Pacific Campaign Medal "Two Gold Stars"; Neff Place on the reservation of the new U. S. Naval Hospital, Dublin, Ga., is to be named in his honor by the Bureau of Medicine and Surgery; senior medical officer of the U. S. S. *Juneau,* sunk on Nov. 13, 1942; aged 38; officially declared dead by the Navy Department July 19, 1943.

Correspondence

DIASONE IN TUBERCULOSIS

To the Editor:—In view of the lay publicity regarding our work with Diasone, antedating the appearance of reports in the medical literature, a statement regarding the status of the work is here submitted.

"Diasone" is the trade name given to disodium formaldehyde sulfoxylate, 4-4′ diamino diphenyl sulfone. Feldman and his associates (*Arch. Path.* **36**:64 [July] 1943) and Callomon (*Am. Rev. Tuberc.* **47**:97 [Jan.] 1943) demonstrated favorable alteration in the course of tuberculosis in experimental animals with the administration of this compound. Because of these reports we initiated a clinical study one year ago to determine the defects of Diasone on tuberculosis in man.

To date Diasone has been administered (orally) to 139 patients only under the most rigid sanatorium regimen and strictest laboratory control.

In September 1943 the observations recorded up to that time were reported at the Mississippi Valley Trudeau Society meeting in Chicago. This report has been accepted for publication in the *American Review of Tuberculosis.* A second report covering observations over eight months was given at the November meeting of the Section on Medicine, Philadelphia College of Physicians, and has been submitted for publication to the *Illinois Medical Journal.* A third report dealing entirely with clinical laboratory studies on patients is in preparation.

A program of further investigation is in operation whereby the observations from other sanatoriums will provide further information in regard to the effects of Diasone in the tuberculous patient.

Diasone is still an experimental therapeutic agent. Much more must be learned about dosage, toxic reaction, change which takes place in the tuberculous lesions and the many other ramifications of such a problem. We cannot be too emphatic at this time in stating that this compound is not ready for even limited distribution until a great amount of investigational work is completed.

I trust that this statement will satisfactorily bridge the gap between the recent "news stories" and the appearance of our prepared report in the medical literature.

CHARLES K. PETTER, M.D., Lake Forest, Ill.

To the Editor:—The treatment of tuberculosis with Diasone has been mentioned frequently in the daily press and in the February issues of the *Reader's Digest* and *Your Life.* Since the American Medical Association will probably receive many inquiries on the subject, I thought you would like to know that both the National Tuberculosis Association and its medical section, the American Trudeau Society, have committees attempting to evaluate this chemotherapeutic agent before further publicity is given it.

The National Tuberculosis Association has a Committee on Chemotherapy under the chairmanship of Dr. Leroy U. Gardner, director of the Trudeau Foundation and Trudeau School, Saranac Lake, N. Y. The American Trudeau Society has a Committee on Therapy under the chairmanship of Dr. H. C. Hinshaw, Mayo Clinic, Rochester, Minn. These committees are working in cooperation, and I am sure that either or both would be glad to be of such help as their special experience may enable them to be.

The first article on this clinical study is in the hands of the editor of our journal, the *American Review of Tuberculosis.* I have requested that Dr. Pinner expedite its publication.

JOHN B. BARNWELL, M.D.,
University Hospital,
Ann Arbor, Mich.
President, American Trudeau Society.

ESTROGEN IN CARCINOMA OF THE PROSTATE

To the Editor:—I was interested in the statement by Dr. Charles Huggins in THE JOURNAL, January 8, that he and Dr. C. V. Hodges had introduced the treatment of carcinoma by the administration of estrogen and gave as a reference *Cancer Research* **1**:293 (April) 1941. Without detracting from the brilliant contribution of Dr. Huggins and his co-workers, the record should be cleared as to the time at which the administration of certain steroid chemical compounds was first suggested as a form of treatment.

In the article in *Cancer Research* Huggins and Hodges reported the reduction in acid phosphatase in patients with cancer of the prostate following injection of diethylstilbestrol 1 mg. daily during periods of from eight to twenty-three days.

In March 1941 I presented a paper entitled "Observations on the Effect of Estradiol Dipropionate and Diethylstilbestrol on Malignant and Hyperplastic Prostatic Tissue" before the Mid Atlantic Section of the American Urological Association in which the course of 7 carcinomas and 22 hyperplasias was described.

On May 31, 1941 a paper entitled "The Effect of Estradiol Dipropionate and Diethylstilbestrol on Malignant Prostatic Tissue" was presented by me at the fifty-third meeting of the American Association of Genito-Urinary Surgeons, Hot Springs, Va. In these two papers the injection of two steroid substances as a method of therapeutic control of extensive carcinoma of the prostate was presented.

WILLIAM P. HERBST, M.D., Washington, D. C.

"THE ROLE OF LIPIDS IN ATHEROSCLEROSIS"

To the Editor:—In THE JOURNAL, Dec. 25, 1943 under Current Comment, page 1121, is a discussion of a review by Hirsch and Weinhouse (The Role of the Lipids in Atherosclerosis, *Physiol. Rev.* **23**:185 [July] 1943). This review is limited largely to chemical studies and does not include any reference to the physicochemical effects of crystalline cholesterol. The reviewers blandly ignore the facts (Leary, Timothy: The Genesis of Atherosclerosis, *Arch. Path.* **32**:507 [Oct.] 1941):

1. That the distinction between atherosclerosis and other forms of arterial disease depends on the presence of visible cholesterol esters in the lesions, not on the presence of phospholipids, glycerides or other lipids.

2. That visible cholesterol under the polariscope is usually ester cholesterol. Visible cholesterol is normally present in the adrenal cortex, sometimes in the interstitial cells of the testicle, in corpora lutea and in sebaceous glands. Visible cholesterol in other sites is excess cholesterol and is associated with disease.

3. That the metabolism of cholesterol is so complex or so difficult (we know little of its metabolism) that excess ester cholesterol is treated as a foreign body, to be engulfed by macrophages and transported to various sites, notably to the arterial intima.

4. That excess ester cholesterol is an irritant comparable to silica sol.

5. That excess cholesterol satisfies all of Koch's postulates with reference to the causation of atherosclerosis. It is constantly present in visible form in the active lesions of the disease. It can be extracted from the lesions. When fed to animals—rabbit, guinea pig, chicken (Dauber, D. V., and Katz, L. N.: Experimental Cholesterol Atherosclerosis in an Omnivorous Animal, *Arch. Path.* **34**:937 [Dec.] 1942)—it will (at least in the rabbit, with whose advanced lesions we are most

familiar) reproduce the lesions of the human disease with greater exactness than can the lesions of many human infections be reproduced by the injection of their acknowledged bacterial causes into susceptible animals. The excess cholesterol will be found in the same relation to the experimental as to the natural human lesions.

The other lipids that are found chemically in the aorta of atherosclerosis may accumulate to try to establish a lipid balance, but there is no evidence that they have any other relation to the disease or its causation.

In their discussion of the "mechanism of lipid deposition" the writers seem to readopt the old Virchow-Aschoff "imbibition theory" which has been disproved but still demonstrates the potency of great names to confuse the issue. Atherosclerosis is a disease caused by the presence of an irritant, i. e. excess cholesterol, in ester form, which is brought to the arterial intima in macrophages and does not arrive by imbibition.

The absence of atherosclerosis in youth is due to the removal of excess esters from the intima in the atheroma of infancy and puberty (Leary, Timothy: *Arch. Path.*, to be published).

TIMOTHY LEARY, M.D., Boston.

TRIBAL EPIDEMICS IN THE YUKON

To the Editor:—I read with special interest the article "Tribal Epidemics in the Yukon" (THE JOURNAL, Dec. 18, 1943) in which John F. Marchand recounts a series of epidemics observed during the latter part of 1942 and 1943 among some Tlingit speaking Indians on Teslin Lake near the Alaska Highway.

During the summer of 1943 I spent seven or eight weeks in anthropological field work at Fort Nelson, B. C., a small settlement 6 miles east of the Alaska Highway. Numerous visitors from highway construction camps visited the settlement during my presence but the local Indians, Cree and Slave, did no work on the construction of the road with the exception of two part-Indians who, because of their knowledge of horses, were employed as packers for the Public Roads Administration during the winter of 1942-1943. With the exception of the annual "flu" epidemic, which strikes throughout the Mackenzie drainage area during the spring months, no epidemic diseases appear to have touched Fort Nelson since the coming of the highway. There were, however, 2 cases of severe painful sore throat that may have been tonsillitis during my presence. These were relieved by gargling with a hypochlorite solution, medical attention being unavailable to these people except for an Army Air Forces physician at the airport across the river and the Indian agent-physician, who makes an annual visit in August. This lack of medical attention is undoubtedly to blame for the high number of deaths resulting from the spring "flu" epidemics. During the winter of 1942-1943, 17 or 18 out of an Indian population of about 150 in the general area of Fort Nelson are reported to have died, many of "flu." A check of remembered deaths indicates that almost half of the population of the Fort Nelson area has died since 1920.

Although contact with the highway is not great for Fort Nelson and the surrounding region, health conditions for the Indians of the North are in general poor. There is therefore every danger that the opening of the country by the new highway will further aggravate these conditions by exposing isolated persons to outside diseases. These facts deserve the attention of the American and Canadian authorities. As Marchand points out, the Indians may not have less resistance to the white man's diseases when medical attention is available, but they deserve to have that attention in the first place.

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COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, Jan. 29, page 320.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, Feb. 21-24. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ARIZONA:* Phoenix, April 4-5. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS:* March. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, June 8. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA. *Written.* Los Angeles, Feb. 7-10. Sec., Dr. Frederick N. Scatena, 1020 N. St., Sacramento.

COLORADO: * Denver, April 4-7. Sec., Dr. J. B. Davis, 831 Republic Bldg., Denver.

CONNECTICUT: * *Medical. Written.* Hartford, March 14-15. *Endorsement.* New Haven, March 28. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic.* Derby, March 13-14. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.

DISTRICT OF COLUMBIA:* *Reciprocity.* Washington, March. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: * Jacksonville, June 26-27. Sec., Dr. W. M. Rowlett, Box 786, Tampa.

INDIANA: Indianapolis, May 2-4. Sec., Board of Medical Registration and Examination, Dr. W. C. Moore, 301 State House, Indianapolis.

MAINE: Portland, March 14-15. Sec., Board of Registration of Medicine, Dr. A. P. Leighton, 192 State St., Portland.

MASSACHUSETTS: Boston, March 14-17. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413-F State House, Boston.

MONTANA: Helena, April 3-5. Sec., Dr. O. G. Klein, First National Bank Bldg., Helena.

NEVADA: *Endorsement.* Carson City, Feb. 7, Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: Concord, March 9-10. Sec., Board of Registration in Medicine, Dr. D. G. Smith, State House, Concord.

NEW JERSEY: Feb. 15-16. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, April 10-11. Sec., Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.

OHIO: *Endorsement.* Columbus, Feb. 7. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

RHODE ISLAND: * Providence, April 6-7. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, June 26-28. Sec., Dr. N. B. Heyward, 1329 Blandena St., Columbia.

WYOMING: Cheyenne, Feb. 7-8. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

COLORADO: Denver, March 8-9. Sec., Dr. E. B. Starks, 1459 Ogden St., Denver.

CONNECTICUT: Feb. 12. Address State Board of Healing Arts, 250 Church St., New Haven.

DISTRICT OF COLUMBIA: Washington, April 17-18. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: Gainesville, June 8. Sec., Dr. J. F. Conn, John B. Stetson University, DeLand.

IOWA: Des Moines, April 11. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

NEW MEXICO: Feb. 7. Sec., Miss Pia Joerger, State Capitol, Santa Fe.

OREGON: Portland, March 4. Sec., Board of Higher Education, Mr. C. D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Feb. 16. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Vermillion, June 4-5. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: Madison, April 1. Sec., Prof. R. N. Bauer, 152 W. Wisconsin Ave., Milwaukee.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Alleged Negligence of Examining Physician for Selective Service Board.—When the plaintiff was 8 years old his right hip was injured by a fall, the femoral head being dislocated from the acetabulum. The normal position was never regained and the hip became stiff and rigid, motion in the right leg was restricted, that leg became about 2 inches shorter than the other and the plaintiff was unable to stoop over. When the plaintiff was 38 years old, pursuant to a notice from his local selective service board, he reported for a physical examination to the office of the defendant physician, who was serving as a resident examiner for that board. The physician, after being informed of the earlier injury, instructed the plaintiff to stand on his right leg and to raise the left leg up "to see how . . . [the] leg acted under the weight of . . . [the] body." Next the physician had the plaintiff lie down on a table and then drew some blood for a serum test. When the physician left the room to put the blood in a laboratory container, the plaintiff left the table and sat down on a chair. He was "wabbly" on his feet and felt "lightheaded." When the physician returned to the room he found that the plaintiff had fainted and he proceeded to revive him, forcing his head and trunk forward until his head rested between his legs. This action, the plaintiff subsequently alleged in a suit for malpractice he instituted against the physician, permanently injured him by severely straining his right hip and breaking and tearing the ligamentous adhesions around the hip that had formed from the prior injury. At the close of the plaintiff's case the trial court denied motions made by the physician for a nonsuit and for a directed verdict. From a judgment for the plaintiff the physician appealed to the Supreme Court of Oregon.

The sole question, said the Supreme Court, is whether any substantial evidence was adduced at the trial to support the verdict of the jury, which of necessity was based on an implied finding that the physician had carelessly and negligently forced the plaintiff's head and trunk forward as stated and that that act had resulted in the injuries of which the plaintiff complained. The evidence did not justify such a conclusion, the court held. The defendant testified, said the court, that he simply put his hand on the plaintiff's head when he found him in an unconscious state and, using only slight pressure, helped him "to maintain his position leaning forward," in order to cause compression on the abdominal vessels and thereby force blood to the brain. According to the undisputed testimony at the trial this is an approved method of reviving a patient who has fainted while in a sitting position. The plaintiff claimed, however, that such a method should not have been used in view of his known physical condition. The plaintiff testified that after regaining consciousness he ascertained that the defendant physician had his hand on the back of the plaintiff's neck trying to get his head between his knees and that he told the physician "You are hurting me, you can't do that" and that the physician replied "Well, I noticed your leg went sideways when I pushed your head down." The physician testified that the pressure put on the plaintiff's head had no relation whatever to his injuries and in this conclusion he was corroborated by another physician, who was the only expert medical witness testifying at the trial. This other witness, who examined the plaintiff about seven months after the occurrence of the alleged malpractice on the part of the defendant physician, further testified that the plaintiff's condition resulted from his old injury and not from anything that the defendant physician had done and that the bending forward of the plaintiff would not cause an injury to the hip, since it would take a great deal of force to break adhesions around the hip. This physician also interpreted the radiographs which he had taken of the plaintiff and stated that the head of the femur was practically gone, as it had been absorbed as a result of chronic arthritis of many years' duration. There was evidence also at the trial that the plaintiff after being revived in the defendant's office walked to his automobile and went home unassisted and that he stayed in bed the next two days, when he came to the defendant's office without crutches to secure a note from the physician to his employer explaining his absence from work. The physician gave the plaintiff a note that stated that the plaintiff had "passed out" in the physician's office and that "in the subsequent maneuvers he sustained a sprain of his injured hip which accounts for his not being on the job for a few days." There was also evidence that prior to the examination in the physician's office the plaintiff was capable of doing light manual labor and walked without crutches, although at times the weight on his injured hip would cause him intense pain. After the examination he continued to work for about one month, but, according to his own testimony, he was obliged to quit on account of his leg "giving out" on him.

For the plaintiff to recover, continued the court, there must be substantial evidence that (1) the defendant was guilty of negligence as charged in the complaint and that (2) such negligence was the proximate cause of the alleged injury. It must be conceded that the note given to the plaintiff by the defendant physician to be presented to the plaintiff's employer is a declaration against his interest and tends to show that he caused a sprain of the injured hip. This court must consider this note as evidence tending to show that what the defendant did was the proximate cause of the plaintiff's aggravated injury. The note does not, however, admit negligence on the part of the physician. The mere fact, in itself, that plaintiff sustained an injury while the defendant was undertaking to revive him does not establish negligence. The more pertinent inquiry is: did the defendant physician exercise that degree of care which, under all the facts and circumstances of the case, would ordinarily have been exercised by a physician practicing his profession in similar localities? There was no expert medical witness offered by the plaintiff to support his charge of negligence. The only expert witness who did testify asserted positively that the defendant physician, in undertaking to revive the plaintiff, followed the approved method. Now, by what standard is the defendant physician to be judged in the practice of his profession pertaining to cases of this character? Is it for a juror who has no knowledge in this field of science to say that the defendant did something he ought not to have done in the light of the known physical condition of the plaintiff? Or should the conduct of the defendant be measured by the standard of his own profession when matters of technical knowledge and skill are involved? The answer seems obvious. We do not mean to hold that, in all cases, the charge of negligence against a physician must be determined exclusively by expert testimony. There are some things of a nontechnical nature occurring in the practice of medicine and surgery which a layman might well comprehend and understand. Under such circumstances, the juror needs no expert witness for his guidance and enlightenment. In this case, however, we think the propriety or impropriety of the method adopted by the physician is not a matter of common knowledge and that expert testimony was essential to establish the charge of negligence. Furthermore, it is significant that, while the plaintiff was examined and treated by several physicians subsequent to his alleged injury by the physician here involved, none of them were subpoenaed by him to testify.

Since the court could find no competent substantial evidence in the record tending to show negligence on the part of the defendant physician, it reversed the judgment of the trial court in favor of the plaintiff.—*Nation v. Gueffroy, 142 P. (2d) 688 (Ore., 1943).*

Society Proceedings

COMING MEETINGS

Annual Congress on Industrial Health, Chicago, February 15-16. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Congress on Medical Education and Licensure, Chicago, February 14-15. Dr. Victor Johnson, 535 N. Dearborn St., Chicago 10, Secretary.

National Conference on Medical Service, Chicago, February 13. Dr. C. L. Palmer, 500 Penn Avenue, Pittsburgh 22, Secretary.

New Orleans Postgraduate Medical Assembly, New Orleans, March 6-9. Dr. Joseph S. D'Antoni, 1430 Tulane Ave., New Orleans 13, Secretary.

Society of University Surgeons, Nashville, Tenn., February 10-12. Dr. Alexander Brunschwig, 950 East 59th St., Chicago, 37, Chairman, Program Committee.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

13:157-184 (Nov.) 1943

Our Health and the Federal Trade Commission. J. J. Durrett.—p. 157.
Coccidioidomycosis. J. D. Bush.—p. 159.
Internal Derangements of Knee Joint. J. D. Sherrill.—p. 167.
Functional Disorders of Upper Digestive Tract. H. M. Simpson.—p. 171.

13:185-216 (Dec.) 1943

Management of Acute Appendicitis. E. Drennen.—p. 185.
Constipation in Infancy and Childhood. W. H. McCaslan.—p. 187.
Cancer of Breast. J. L. Carmichael.—p. 190.
Surgical Jaundice. J. M. Washam.—p. 193.

American Journal of Hygiene, Baltimore

38:223-346 (Nov.) 1943

Anerogenic and Indole Forming Salmonella Variants. E. Seligmann and I. Saphra.—p. 223.
Salmonella Infections in Man: Analysis of 1,000 Cases Bacteriologically Identified by New York Salmonella Center. E. Seligmann, I. Saphra and M. Wassermann.—p. 226.
Food Borne Streptococcus Poisoning and Infection: Differentiation of Staphylococcal Enterotoxin from Toxic Substances Produced in Minced Tissue Media by Hemolytic Streptococci and Other Agents. G. E. Foley, S. M. Wheeler and V. A. Getting.—p. 250.
Ten Year Population Study of Rabbit Tick Haemaphysalis Leporis-Palustris. R. G. Green, C. A. Evans and C. L. Larson.—p. 260.
Virulence of Tularemia as Related to Animal and Arthropod Hosts. R. G. Green.—p. 282.
*Studies on Intestinal Parasites of Mental Patients. R. Burrows.—p. 293.
Effectiveness of Pertussis Vaccine: An Application of Sargent and Merrell's Method of Measurement. E. S. Weiss and Pearl L. Kendrick.—p. 306.
Pathogenic and Antigenic Properties of Dermal Vaccinia Virus Propagated in Chorioallantois of Chick Embryos. G. J. Buddingh.—p. 310.
Factors Determining Severity of Poliomyelitis in Macaca Mulatta. F. J. Moore and J. F. Kessel.—p. 323.

Intestinal Parasites of Mental Patients.—Burrows studied infestation of mental patients with intestinal parasites in the South Carolina State Hospital. The aim was to determine the extent of infestation, so that a program of treating patients and eliminating sources of infection could be carried out. The study included the determination of the presence of both protozoa and helminths by means of the simple smear, the iodine stained smear and, in doubtful cases of amebic infestation, the iron-hematoxylin preparation; also the examination of anal swabs to detect the incidence of pinworms; the examination by flotation methods, of soil samples from the exercise yards; the examination by adhesive cellulose tape methods of samples taken from the walls, doorknobs, furniture and toilet seats in the buildings; the determination in a representative group of females of the egg count per gram of stool, and a study of the untidy habits of patients who had been in the institution long enough to be transferred from the receiving wards. Over 3,000 stool specimens from 2,055 patients, and anal swabs from 1,383 patients, were examined. The rates of parasite infestation in 637 newly admitted patients gave an indication of the rates for the state and a basis for comparison with patients who have been in the hospital for longer periods. Mental patients show higher infestation rates for most intestinal parasites than do noninstitutionalized persons. There is an increase in number of species per patient and a greater intensity of worm infestations with increased residence. Untidy habits lead to the acquisition of many infections. There is an increase in infestation in nurses and attendants who work with the more deteriorated patients. Grounds and buildings were examined for sources of infestation. A steam hood devised for disinfesting the soil proved effective.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

50:575-718 (Nov.) 1943

Similarity of Clinical and Roentgen Findings in Children with Ewing's Sarcoma (Endothelial Myeloma) and Sympathetic Neuroblastoma. R. P. Barden.—p. 575.
Renal Dwarfism or Renal Rickets. R. C. Moehlig.—p. 582.
*Epidermoid Carcinoma of Tibia: Report of 2 Cases. E. Kraft.—p. 602.
*Fractures of Rib Cage Following Interstitial Radium Therapy for Cancer of Breast. H. Wammock and R. K. Arbuckle.—p. 609.
Effects of Roentgen Irradiation on Cardiovascular System. J. E. Leach.—p. 616.
Modification of Radiosensitivity of Skin: VI. Effects of Compression and Low Temperature on the Roentgen Irradiation Reaction of Human Skin. T. C. Evans and H. D. Kerr.—p. 629.
Group of Persons Whose Skin and Subcutaneous Tissues are Unusually Sensitive to Roentgen Rays. A. U. Desjardins.—p. 636.
Effect of Roentgen Rays, Radon and Radioactive Phosphorus on Thiamin Chloride. C. E. Dunlap and F. C. Robbins.—p. 641.
Roentgen Ray Measurements up to 400 Kilovolts Made with Beryllium Window Tubes. E. D. Trout and Z. J. Atlee.—p. 648.
Dosage Measurements in Contact Roentgen Therapy. Edith H. Quimby and Elizabeth F. Focht.—p. 653.
Depth Dose Measurements in Contact Roentgen Therapy on Biologic Test Object (Rabbit's Skin).—p. 669.
New Medium for Gallbladder Visualization. M. G. Wasch.—p. 677.
Observations on Priodax: New Contrast Medium for Visualization of the Gallbladder. W. A. Marshall.—p. 680.

Epidermoid Carcinoma of Tibia.—Kraft saw 2 instances of epidermoid carcinoma of the tibia within three months. Etiologically there are two types of invasion carcinoma of the tibia: (1) ulcer carcinoma, which arises within a chronic ulcer of the leg, and (2) fistula carcinoma, which originates in a fistulous tract or osseous sinus. These two predisposing conditions may persist for years without becoming malignant. His first patient gave a history of recurrent ulcers dating back more than thirty years. In the second case there was a chronic osteomyelitis. In both instances the malignant growth developed rather suddenly and progressed rapidly. The first patient came to the hospital after a pathologic fracture had occurred. The second patient lost 20 pounds (9 Kg.) during a period of six months and noticed progressive oozing of the leg and progressive weakness. The correct diagnosis was obvious in the first case because of the far advanced osteolytic process. The second case was somewhat complicated because of a typical osteomyelitis. The x-ray appearance was similar to that reported by Hellner. The prognosis of the condition is favorable even in advanced cases, since distant metastatic lesions have been rarely observed. Amputation of the diseased leg is usually indicated unless an early diagnosis allows more conservative procedures. In chronic osteomyelitis efforts should be made to cure residual active foci. With an increase in secretions and development of pain and hemorrhage periodic roentgenologic and biopsy studies are advisable to determine the presence of an epidermoid carcinoma. Dockerty and Meyerding recently reported 2 cases of adamantinoma of the tibia. They concluded that tibial adamantinomas are merely modified squamous cells which vary considerably in their differentiation into ameloblasts. The fact that adamantinoma is closely related to epidermoid carcinoma finds further corroboration in the following common characteristics: (1) a long history of chronic irritation with episodes of either initial or aggravating trauma and (2) sites of predilection in the tibia, jaw bones and skull.

Fractures of Ribs Following Radium Therapy for Cancer.—Wammock and Arbuckle report 10 cases in which fractures of ribs followed treatment by interstitial radium element needles for cancer of the breast. Clinical evidence of cancer was not observed for periods ranging from four to nine years. In most instances the fractures appeared in less than two years. In 1 case a fracture was detected as early as eleven months after treatment. In the differential diagnosis traumatic fracture and neoplastic invasion must be considered. A traumatic fracture can be ruled out on the basis of a careful history. In neoplastic invasion the area treated shows regeneration of bone. The lack of progression of destruction and the smoothing off of the ends of the fragments militate against a neoplastic process. Although, except in 1 case, there was no microscopic verification, the authors believe that the clinical condition of the patient and the lack of evidence of cancer elsewhere justifies the consideration of these rib changes as due to a non-neoplastic

post-gamma irradiation effect. They think that this effect is brought about by interference with the blood supply of the ribs. It is evident that adult bone is not resistant to therapeutic irradiation directed to a nearby neoplasm.

Annals of Internal Medicine, Lancaster, Pa.

19:707-828 (Nov.) 1943

*Penicillin as Chemotherapeutic Agent. M. H. Dawson, Gladys L. Hobby, K. Meyer and Eleanor Chaffee.—p. 707.
*Reactions to Parenteral Fluid Administration. M. M. Strumia, J. J. McGraw and A. Blake.—p. 718.
Nutrition and Resistance. F. J. Stare.—p. 735.
Psychosomatic Illnesses in Urban Practice. R. S. Leadingham.—p. 741.
Effects of Novocain Injections on Simulated Visceral Pain. D. Young.—p. 749.
Calcareous Pancreatitis; Report of 3 Cases with Autopsies. J. G. Pasternack.—p. 757.
Allergic Reactions to Liver Extract. R. E. Kaufman, L. Farmer and C. Reich.—p. 768.
*Management of Paroxysmal Tachycardia Including Use of Mecholyl. P. W. Morgan.—p. 780.
*Treatment of Subacute Bacterial Endocarditis: Current Results. S. S. Lichtman.—p. 787.
Psychosis Due to Sulfonamides. R. E. Kinsey.—p. 795.

Penicillin as Chemotherapeutic Agent.—According to Dawson and his collaborators penicillin exhibits a remarkable antibacterial action against gram positive organisms, gonococci and meningococci. It is not effective against gram negative bacteria. Its activity is of a totally different order of magnitude from that of any of the sulfonamide compounds. Penicillin is effective both in vitro and in vivo. It is active in the presence of pus and inflammatory exudates. Its action appears to be either bactericidal or bacteriostatic, depending on the conditions of the experiment. Penicillin appears to be completely nontoxic in doses far exceeding those necessary for therapeutic purposes. Because it is rapidly excreted by the kidneys, frequent administration is necessary to maintain an adequate blood concentration. It promises to be a chemotherapeutic agent of great clinical value. The clinical use of penicillin so far has been greatly hampered by the small yield. A number of cases have been treated with dramatic results. Penicillin has been proved to be effective in man when given intramuscularly, intravenously and intrathecally. It has also proved effective when administered directly into joints and serous cavities, as well as in local applications.

Reactions to Parenteral Fluid Administration.—According to Strumia and his co-workers, reactions to intravenously administered fluids such as whole blood, plasma, human serum and crystalloid solutions may be inherent in the fluid or may be peculiar to the recipient or to a combination of these two factors. The most common reactions due to causative elements inherent in the fluid alone may be pyrogenic, nitritoid, embolic or mechanical in character. Reactions due to inherent qualities of the fluid combined with conditions of the patient may be hemolytic and allergic. Conditions inherent in the recipient alone which increase the incidence of reactions may be due to hyperhemolysis, liver disease, hypoproteinemia and cardiac insufficiency. Free hemoglobin, potassium content, temperature and air embolism are elements often mentioned as potential or actual causes of reactions. Pyrogenic reactions are by far the most common. To avoid these they make the following recommendations: 1. Avoid contamination of the fluids remaining unused after administration. 2. Clean the glassware and other apparatus properly and follow it by rapid drying or sterilization. 3. Do not store distilled water for more than three hours after preparation unless sterilized. A regular system should be instituted for the reporting in detail of all reactions occurring, so that critical scrutiny of each case will allow improvement of the service.

Management of Paroxysmal Tachycardia.—According to Morgan, paroxysmal supraventricular tachycardia is a common functional cardiac abnormality usually seen in normal hearts. Most attacks do not require medical attention, but it is estimated that 10 to 20 per cent defy the patient's efforts to stop them. To prevent attacks, attention should be given to extracardiac somatic factors; reassurance to the patient and investigation of psychic factors are indicated. If drugs are used because attacks are frequent and tend to persist and annoy the patient, quinidine is best, but an occasional patient responds better to digitalis. Sedatives are helpful. An attack that develops can usually be stopped by some form of carotid sinus reflex elicitation, by sedatives or by the oral administration of quinidine. If the latter is ineffective, digitalis has been used either orally or parenterally, but mecholyl is preferred if parenteral therapy is indicated. The patient receiving mecholyl should be recumbent, since the erect posture at the height of the drug's action may cause fainting. The average dose of mecholyl for adults is 20 to 50 mg. Mecholyl is administered subcutaneously below or distal to the blood pressure cuff, which is not inflated. At the moment the heart rhythm and rate return to normal as detected by the stethoscope over the precordium, the blood pressure cuff is inflated to prevent further absorption and to make a vein ready if desired for the administration of atropine. The return to sinus rhythm has occurred in the author's experience as early as eighty seconds after the mecholyl injection. If no effect is manifest thirty minutes after the injection, another dose can be given. The rapid rhythm is interrupted by a brief period of asystole; the next few beats seem slightly slower than the normal sinus rhythm, which is quickly established. The quick transition from a heart rate of 160 to 180 to one of 70 or 80 with the brief asystole is usually noted by the patients, though the relief from the rapid rate is ample reward for the brief moment of what they have termed a "funny feeling." No deaths have been reported from the use of mecholyl, but reports are available of great overdosage and mistaken intravenous administration and in each instance recovery was complete.

Treatment of Subacute Bacterial Endocarditis.—Lichtman found that the recovery rate among 704 patients averaged 5.5 per cent. Of 489 patients given sulfonamide chemotherapy 21 recovered, giving an incidence of 4 per cent; among the remaining 215 patients given chemotherapy supplemented by heparin or fever therapy 18, or 8.5 per cent, recovered. Of 109 heparinized patients 7 recovered, giving an incidence of 6.5 per cent. Of 61 patients treated with artificial fever therapy 4 recovered, an incidence of 6.5 per cent recovery. The incidence of spontaneous recovery in subacute bacterial endocarditis is estimated at approximately 1 per cent. Artificial fever therapy supplementing sulfonamide chemotherapy produced a slight but significant increase in recovery rate from 4 to 6.5 per cent. Intravenous typhoid vaccine likewise appeared to give an increased recovery rate. The evaluation of heparinization requires further trial. Surgical ligation of a patent ductus arteriosus complicated by subacute bacterial endocarditis gave the highest percentage of recoveries. Failure to effect recovery in a large series of cases of subacute bacterial endocarditis treated by current methods does not justify the blanket rejection of published reports of recovery as spurious cases of subacute bacterial endocarditis. Until methods of treatment are further improved, every patient with subacute bacterial endocarditis should receive intensive sulfonamide chemotherapy to tolerance. The choice of supplementary therapeutic measures rests with individual preference.

Archives of Physical Therapy, Chicago

24:639-706 (Nov.) 1943

Causalgic States Following Injuries to Extremities. G. de Takats.—p. 647.
Physical Treatment of Disabilities of Foot Commonly Encountered in Military Service. T. E. Dredge.—p. 653.
Some Thoughts About Shock Therapy. C. A. Neymann.—p. 660.
Nature and Chemical Action of Ultraviolet Light. G. K. Rollefson.—p. 664.
*Treatment of Shock, with Special Reference to Use of Heat and Cold. W. H. Cole.—p. 670.
Rehabilitation. H. E. Mock.—p. 676.

Treatment of Shock with Reference to Heat and Cold.—Cole shows that the application of heat as practiced in the treatment of shock has been proved to be erroneous and actually damaging to the patient. Ordinarily thermal therapy may be ignored, since room temperature, with perhaps the application of a single blanket as utilized in the postoperative wards of a hospital, will be the most favorable circumstances from the standpoint of heat or cold. The most deleterious effect from heat is derived from the increase in the metabolic rate and consequent increased oxygen consumption. Since the body already is in a state of anoxia, this increase in the metabolic rate and oxygen consumption becomes harmful. Heat is also

deleterious because it causes vasodilatation, replacing the vasoconstriction which is a protective mechanism improving the blood pressure and the blood flow. Vasodilatation results in reduction of the circulating blood volume, thereby counteracting the efforts of the body to combat the loss in the blood volume. A third deleterious effect is related to increased loss of fluid by perspiration and into the tissues through increased capillary permeability.

California and Western Medicine, San Francisco

59:253-300 (Nov.) 1943

Voluntary Health Plans in California. J. R. Mannix.—p. 258.
Treatment of Birthmarks? W. Bailey and W. Kiskadden.—p. 265.
Sodium Sulfadiazine in the Treatment of Meningococcic Meningitis. J. B. McDonald and C. T. Johns.—p. 269.

Canadian Medical Association Journal, Montreal

49:349-454 (Nov.) 1943

The "Pulhems" System of Medical Grading. J. C. Meakins.—p. 349.
Standardized Method for Producing Shock in Dogs by Bleeding. R. A. Cleghorn, J. B. Armstrong and A. D. McKelvey.—p. 355.
*Effect of Different Environmental Temperatures on Survival of Dogs After Severe Bleeding. R. A. Cleghorn.—p. 363.
Three Years of Neuropsychiatry in Canadian Army (Overseas). F. H. van Nostrand.—p. 367.
Gunshot Wounds of Head: (A Review of After-Effects in 500 Canadian Pensioners from the Great War, 1914-1918). W. O. Gliddon.—p. 373.
Some Life Saving Procedures in Obstetrics. H. B. Atlee.—p. 378.
Radiation Therapy in Carcinoma of Breast. J. Bouchard.—p. 382.
Castration for Carcinoma of Prostate: Report on Fifteen Treated Cases. E. Smith and J. T. MacLean.—p. 387.
Failures in Inguinal Hernia. R. Anderson.—p. 392.
Ganglioneuroma of Mediastinum. G. F. Skinner, A. Branch and Irene Allen.—p. 397.
Diagnosis of Chronic Right Heart Strain Secondary to Pulmonary Disease. A. S. Kennedy.—p. 399.
The Brenner Tumor of the Ovary. J. E. Ayre and P. J. Kearns.—p. 404.
Dissecting Aneurysms. L. Shapiro.—p. 408.
Tuberculous Ascites in an Aged Negress. N. M. Webster and D. deF. Bauer.—p. 414.

Effect of Temperatures on Survival After Bleeding.—Cleghorn investigated the influence of different environmental temperatures on the survival of critically bled dogs. The mortality at four different temperatures was 18 per cent at 72 F., 38 per cent at 52 F., 45 per cent at 85 F. and 93 per cent at 95 F. The higher mortality in the dogs at 52 compared with those at 72 F. is ascribed to the increased oxygen requirement. The higher mortality in the dogs at 85 compared to those at 72 F. is attributed to the deleterious influence of vasodilatation caused by this degree of warming. The insensible water loss in this group was not a factor, as it was the same at the two temperatures. The higher mortality in the dogs at 95 compared with those at 72 F. is ascribed to vasodilatation and to increase in insensible water loss associated with the panting which occurred at this temperature. In another group of dogs exposed to 95 F. an amount of water equivalent to the increase in the insensible water loss was given. The mortality in this group was reduced to approximately that seen in the dogs exposed to 85 F. Patients suffering from secondary shock or severe acute hemorrhage should not be heated.

Experimental Medicine and Surgery, Brooklyn

1:309-416 (Nov.) 1943. **Partial Index**

Tumors of Adrenal Cortex: Procedure Whereby Postoperative Prognosis May Be Improved. R. Nissen.—p. 309.
Pancreas and Problem of Asymmetry. The Nonexistence of Transformation of D-Tartaric to Mesotartaric Acid by Pancreas: Method of Determination of Tartaric Acids in Biologic Materials. C. Neuberg and H. Lustig.—p. 314.
Circulation in Spinal Anesthesia with Procaine. B. Kisch.—p. 336.
Exercise Test in Digitalized Block. F. M. Groedel.—p. 380.
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Gastroenterology, Baltimore

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Journal of Experimental Medicine, New York

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*Poliomyelitis in Cynomolgus Monkey: I. Comparison of Upper Portion of Alimentary Tract with Its Lower Gastrointestinal Portion as Port of Entry, with Special Reference to Peripheral Ganglia. H. K. Faber, Rosalie J. Silverberg and L. Dong.—p. 499.
*Id: II. Resistance to Spread of Infection in Central Nervous System Following Exposures of Mucous Membranes to Virus, with Comments on Nonparalytic Poliomyelitis. H. K. Faber, Rosalie J. Silverberg and L. Dong.—p. 519.

Port of Entry for Poliomyelitis.—Faber and his collaborators subjected monkeys to a series of exposures of the mucous membrane of the alimentary tract in order to test the permeability to poliomyelitis virus of its upper and lower portions. The tests indicate that the upper portion of the alimentary tract (mouth, pharynx and perhaps the esophagus) appears to be more vulnerable and constitutes a more probable primary port of entry for poliomyelitis than the lower gastrointestinal portion.

Resistance to Spread of Poliomyelitis in Central Nervous System.—Faber and his co-workers show that repeated nontraumatic exposures to poliomyelitis virus of the mucous membrane of the upper respiratory tract and of various portions of the alimentary tract in 5 monkeys, extending over a period of nine to fourteen months were followed by a definite though limited resistance to intracerebral inoculation to the homologous strain of virus in 4 of them. Only 1 monkey developed paralysis (20 per cent incidence), while the other 4 remained free from signs and symptoms of the disease. Ninety-two per cent of 25 previously untreated monkeys developed paralysis with the same strain after intracerebral inoculation. The observations point to the acquisition by the animal of the power to limit the spread of infection in the central nervous system rather than of the capacity entirely to prevent implantation and multiplication of virus. This limitation of spread resembles the tendency so commonly seen in human poliomyelitis of the disease to "halt" at some stage of its evolution, resulting in the various clinical gradations in extent and severity of involvement (subclinical, abortive, nonparalytic and mild paralytic forms).

Journal of Immunology, Baltimore

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Effect Produced in Vitro by Vitamin C on Toxic and Antigenic Properties of Diphtherial Toxin. Frances E. Willison.—p. 409.
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*Losses of B Vitamins Due to Cooking of Foods. V. H. Cheldelin, Alethea M. Woods and R. J. Williams.—p. 477.
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Effect of Thiamine, Riboflavin or Pyridoxine Deficiency of Intestinal Absorption of Galactose in Rat. J. R. Leonards and A. H. Free. —p. 499.
Study of Normal Human Requirements for Ascorbic Acid and Certain of Its Metabolic Relationships. Helen J. Purinton and Cecilia Schuck, with cooperation of Mary K. Ade, A. Cole, P. H. Schmeidicke and S. J. Miller.—p. 509.
Nutritive Value of Protein: I. Effect of Processing on Oat Protein. R. A. Stewart, G. W. Hensley and F. N. Peters Jr.—p. 519.
Determination and Content of Carotene and Vitamin A in Wisconsin Butter. S. Berly and W. H. Peterson.—p. 527.
Ascorbic Acid Requirements of School Age Girls. Vivian M. Roberts, Margaret Hessler Brookes, Lydia J. Roberts, Peggy Koch and Peggy Shelby.—p. 539.

Losses of B Vitamins Due to Cooking.—Cheldelin and his co-workers discuss losses in riboflavin, nicotinic acid, pantothenic acid, biotin, inositol and folic acid in the process of cooking. Vegetables, fruits, milk and eggs were purchased in nearby markets in as fresh condition as possible. Meats were obtained from a wholesale butcher. Fish were bought as frozen commercial products. Thirty different foods were analyzed. Riboflavin was destroyed in variable amounts in the presence of light; the losses in the dark were negligible. The loss of nicotinic acid was usually slight; destruction of pantothenic acid was moderate to slight in vegetables, somewhat larger, up to one third, in meats. Loss of biotin was moderate to negligible in vegetables and quite high in meats (up to 72 per cent). The loss of inositol was generally moderate among meats, with steamed samples only slight, and often up to 95 per cent in vegetables, especially legumes. Folic acid showed the greatest loss due to cooking. With the exception of liver and sauerkraut, which retain the bulk of their folic acid content, losses among meats range from 46 per cent in halibut to 95 per cent in pork chops; losses in vegetables range from 69 per cent in cauliflower to 97 per cent in carrots. The reasons for such large losses are not known.

Journal Pharmacology & Exper. Therap., Baltimore

79:187-270 (Nov.) 1943. **Partial Index**

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Effect of Hemorrhage on Anesthetic Dosage. D. R. Wood and N. T. Jaco.—p. 259.
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Michigan State Medical Society Journal, Lansing

42:849-928 (Nov.) 1943

Position of Postwar Medicine in Relation to Expanding Government Controls. E. A. Schumann.—p. 875.
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Nebraska State Medical Journal, Lincoln

28:369-396 (Dec.) 1943

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New York State Journal of Medicine, New York

43:2015-2126 (Nov. 1) 1943

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Electric Shock Therapy in Manic Depressive Psychoses. Margaret T. Ross.—p. 2055.
Study of Over 2,000 Cases of Electrofit Treated Patients. D. J. Impastato and R. J. Almansi.—p. 2057.
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43:2127-2238 (Nov. 15) 1943

Functions of Industrial Medical Service. C. M. Peterson.—p. 2161.
Industrial Medical Provisions for Various Sizes of Plants, Both Personnel and Physical Equipment. C. D. Selby.—p. 2163.
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What Plan Shall We Pursue Concerning Physical Defects in General Population? C. Watson.—p. 2169.
Medical Aspects of Absenteeism in Industry. M. Woody.—p. 2174.
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*Effect of Antepartum Administration of Quinine on Labor and Puerperium. A. A. Marchetti, A. Kuder and L. E. Fitch.—p. 2183.
Present Day Treatment of Burns. J. W. Bulmer.—p. 2192.
Congenital and Acquired Obstructions at Vesical Neck in Children. J. S. Ritter and S. E. Kramer.—p. 2196.
Vocational Rehabilitation—A Practical Approach. D. R. Salmon. —p. 2203.
1943 Navy Day Address. E. R. Eaton.—p. 2206.

Antepartum Administration of Quinine.—Reports in the literature indicate that daily administration of small doses of quinine during the antepartum period has a favorable effect on labor and the puerperium. Marchetti and his associates investigated this problem on 500 patients and on an equal number of controls. The 500 women to whom quinine sulfate was given included 290 primiparas and 210 multiparas; the controls, 269 primiparas and 231 multiparas. Approximately three weeks before the expected date of confinement each patient selected to receive the drug was given an envelop containing twenty 1½ grain (0.1 Gm.) capsules of quinine sulfate. She was instructed to take one capsule three times a day, so that the total daily dosage amounted to 4½ grains (0.3 Gm.). Quinine did not shorten the duration of labor. On the contrary, it was lengthened among the primiparas. No relationship was noted between the number of doses or the amount of quinine administered and the duration of labor. In the quinine series the percentage of women who delivered before the expected day of delivery was slightly higher than in the control series. It appears that quinine does not make labor easier. In the quinine series labor was terminated spontaneously in 82.6 per cent, by forceps application in 11.4 per cent and by breech extraction in 5.2 per cent of the cases. In the control series it was terminated in 90.8 per cent spontaneously, in 6.6 per cent by forceps application and in 2.4 per cent by breech extraction. Eight, or 1.6 per cent, of the patients to whom quinine was administered manifested some idiosyncrasy to it. No adverse effect of quinine medication was noted on fetal mortality. No significant variation was observed in the amount of blood loss during the delivery in the two series. Subinvolution was recorded more frequently in the control series than in the quinine series. The incidence of puerperal morbidity was 6.2 per

cent and of puerperal infection 4.6 per cent in the quinine series, and 8.0 per cent and 6.8 per cent respectively in the control series. It is concluded that the use of quinine in obstetrics may prove to be of little value.

Radiology, Syracuse, N. Y.

41:421-526 (Nov.) 1943

*Roentgenologic Aspects of Acute and Chronic Esophagitis. L. W. Paul.—p. 421.
Roentgenologic Manifestations of Pleuropulmonary Involvement in Tularemia. F. E. Bihss and H. I. Berland.—p. 431.
Roentgenographic Diagnosis of Neoplasms of the Periampullary Region and Head of the Pancreas. A. Brunschwig and F. E. Templeton. —p. 438.
Nonorganic Gastric Filling Defects Simulating Carcinoma. E. L. Jenkinson and K. K. Latteier.—p. 444.
Observations on Venography of the Lower Extremities. E. C. Baker and S. H. Sedwitz.—p. 451.
Roentgen Diagnosis of Biliary Tract Tumors. S. Brown, J. E. McCarthy and A. Fine.—p. 459.
Roentgen Rays in Treatment of Cervical Lymphadenitis. R. Rosh and W. P. Quin.—p. 464.
Review of Scott Wide Field X-Ray Treatment. G. F. Pfahler.—p. 468.
Apparently Solitary Myeloma of Bone with Subsequent Generalization: Favorable Response to Irradiation with Unusual Reactions. B. J. Toth and J. A. Wintermantel.—p. 472.
*Recovery of Radium Tubes from Sewer. M. M. D. Williams.—p. 478.
X-Ray Therapy in the Army. J. L. Barner.—p. 483.

Roentgenologic Aspects of Esophagitis.—Acute ulcerative esophagitis is a lesion frequently seen at necropsy but is rather uncommon as a clinical disease, suggesting that there must be a pronounced lowering of general resistance before it can develop. Clinically, acute ulcerative esophagitis is most often associated with peptic ulcer or develops during the immediate period following upper abdominal operations. Anything which tends to cause relaxation of the cardia, permitting acid gastric juice to come in contact with the esophageal mucosa, may predispose to its development. Frequent vomiting is an important factor. The use of a negative suction apparatus in itself is of questionable importance but may play a part when additional causes are present. The x-ray appearances, according to Paul, consist of a severe spasm of the distal part of the esophagus, loss of mucosal folds, and a fine roughening of surfaces. The lesion tends to progress to a fibrous stricture. Chronic esophagitis of sufficient severity to be the cause of symptoms is also uncommon. If it is present for a sufficient length of time, the x-ray findings may be those of a diffuse fibrous stricture, since the esophagus shows a great tendency for the development of fibrosis when involved by infection. In other instances of chronic esophagitis the most striking x-ray manifestation is intermittent, diffuse spasm of the lower half or third, with thickening of the mucosal folds.

Recovery of Radium Tubes from Sewer.—Williams gives an account of a search for three radium tubes. Each contained approximately 50 mg. of radium and was sealed inside a glass tube, which in turn was sealed inside a tube of monel metal. The outside dimensions were 1 1/16 inches in length and a little less than 1/4 inch in diameter. At all times while a scraper, or other object, was being pulled through a section of sewer, the Geiger-Müller tube was suspended in the downstream manhole to detect the approach of a radium tube, and a fine mesh screen was at all times kept ready to be placed over the outflow opening in the manhole to prevent a tube from being washed into the next section of sewer. Six weeks after the tubes had been lost two of the radium tubes were retrieved from the sewer, one being attached to a wadded up tire chain that had been pulled through the sewer, and the other was pushed ahead of a scraper. It was believed that the third might be lodged in a crevice, where it could not be dislodged by anything pulled through. It was decided, therefore, to try to determine definitely whether or not the tube was in a given section of sewer before attempting to clean it. Pulling the Geiger-Müller tube through the sewer proved impracticable during wartime because of the shortage of suitable shielded cables. It was decided to use a Lauritsen electrometer or a Victoreen minometer. Preliminary tests revealed that the Victoreen minometer was only about one fifteenth as sensitive as the electrometer The latter instrument localized the tube in a circumscribed area, where it was discovered in a deposit about 2 inches thick in the bottom of the sewer. Electroscopes and Geiger-Müller counters have been used by several searchers in the past to locate radium in sewer lines, but, as far as is known, this is the first time such an instrument has been pulled through a sewer.

Rocky Mountain Medical Journal, Denver

40:713-792 (Nov.) 1943

Industrial Medical Program of Army. H. R. Hennessy.—p. 730.
Neurologic Treatment in General Practice. H. R. Carter.—p. 733.
Suppurative Pneumococcic Arthritis. Report of Case Treated with Sulfathiazole. B. N. E. Cohn.—p. 737.

40:793-866 (Dec.) 1943

Burns: R. T. Richards.—p. 810.
Management of Minimal and Moderately Advanced Case of Pulmonary Tuberculosis. A. Rest—p. 816.
Sulfonamide Therapy. R. A. Kocher.—p. 821.
Waterhouse Friderichsen Syndrome. Three More Cases. F. Mayner. —p. 827.

Surgery, St. Louis

14:645-806 (Nov.) 1943

*Surgical Service of Station Hospital in Middle East. F. E. Walton. —p. 645.
Traumatic Surgery: Review of Some Bone and Joint Injuries in Wartime. A. G. Ord, R. Shackman and H. L. M. Roualle.—p. 651.
Effect of Sulfur Compounds on Blood Clotting. G. De Takats.—p. 661.
*Effect of Heparin on Experimentally Produced Venous Thrombosis. J. Rabinovitch and B. Pines.—p. 669.
Intravenous Clotting and Its Sequelae. A. Ochsner and M. DeBakey. —p. 679.
One Stage Perineoabdominal Operation for Cancer of Rectum. A. O. Singleton.—p. 691.
Appendical Abscess. A. I. Chenoweth.—p. 702.
*Intussusception: Ninety-Two Cases in Infancy and Childhood. E. W. Gibbs and P. W. Sutton.—p. 708.
Mastitis Obliterans. R. L. Payne, A. F. Strauss and R. D. Glasser. —p. 719.
*Use of Intravenous Ammonium Chloride in Treatment of Alkalosis. H. A. Zintel, J. E. Rhoads and I. S. Ravdin.—p. 728.
Role of Surgery in Treatment of Malignant Skin Tumors. D. P. Slaughter.—p. 732.

Effect of Heparin on Experimentally Produced Venous Thrombosis.—Rabinovitch and Pines produced in rabbits a thrombus in a vein by injuring its endothelial lining and slowing the local circulation. Liquaemin was shown to be a powerful anticoagulant of the rabbit's blood even when administered in small single doses. The administration of liquaemin before injuring the vein and the formation of a thrombus prevented the subsequent development of a local intravascular clot. It was found unnecessary to administer the anticoagulant continuously in order to obtain the desired effects. In a certain number of cases liquaemin proved effective in causing the solution or disappearance of a thrombus but only when given during the early stages of clot formation. It was of no effect when given late after the clot had already organized.

Intussusception in Infancy and Childhood.—Gibbs and Sutton analyze 92 cases of intussusception observed between 1927 and 1942; 62.5 per cent of the patients were infants between 2 and 11 months of age; 62 per cent of the patients were boys and 38 per cent were girls. Intermittent colicky abdominal pain, vomiting and passage of bloody stools were present in less than one half of the cases. Abdominal pain was present in 73.3 per cent. Vomiting usually appears early and in many small infants was the first sign. It was recorded in 89.5 per cent of the cases. A history of blood in the stool, hematochezia, was noted in only 70.9 per cent of the cases. A palpable abdominal mass was recorded in only 64.3 per cent. Every case of intussusception is a surgical emergency requiring immediate operation. Reduction was all that was done in 25 cases, with a mortality rate of 40 per cent. In 16 cases some attempt was made to fix the bowel and prevent recurrence in addition to reduction. The mortality in this group was 25 per cent. In 32 cases appendectomy was done, with an associated mortality of 3.1 per cent. Reduction and Meckel's diverticulectomy were done in 2 cases with 1 death. Resection and primary anastomosis was done in 7 cases with a mortality of 42.9 per cent. There were 77 cases in which reduction was accomplished without major bowel resection, with 17 deaths, a mortality rate of 22.1 per cent. In 14 cases in which some form of major resection was necessary there were 10 deaths, a mortality of 71.5 per

cent. In the latter group the results with resection and primary anastomosis were better than with the establishment of an enterostomy. Care in establishing fluid and electrolyte balance before operation and maintaining it during and after operation with intravenous and subcutaneous administration of fluids, and the more frequent use of oxygen therapy have contributed to improved results.

Intravenous Ammonium Chloride in Alkalosis.—Zintel and his associates think that the use of continuous suction drainage of the stomach, especially in the preoperative preparation of patients with pyloric obstruction, has been responsible for most of the cases of severe alkalosis. It was generally believed that if the body was supplied with sufficient isotonic solution of sodium chloride and if ketosis was prevented, the electrolyte pattern of the plasma would be adjusted satisfactorily by the kidneys. The patients whose histories are reviewed here all received fluid and sodium chloride in amounts calculated to restore their plasma electrolyte patterns. The authors believe that the intravenous injection of ammonium chloride is at times justified for patients with severe alkalosis who have been treated with ample fluid and sodium chloride. In most instances the response to this therapy was quite uniform. It appeared that for an adult of 150 pounds (68 Kg.) 1 Gm. of intravenous ammonium chloride will reduce the serum carbon dioxide by an average of 1.1 volumes per cent. Two per cent solutions of ammonium chloride were prepared by dissolving 20 Gm. of ammonium chloride in a liter of water, 0.9 per cent sodium chloride solution or 5 per cent dextrose solution. In most instances the solution was brought to boiling just before the ammonium chloride was added and then allowed to cool slowly. It was used as soon as it had cooled sufficiently. The rate of administration varied with the exigencies of the case, but usually it was not greater than 1,000 cc. in two hours. The ammonium chloride solution was administered intravenously to 7 patients without harm. It was effective in rapidly lowering the serum carbon dioxide at the rate of approximately 1 volume per cent for each gram administered to adults of medium size and weight. Sufficient evidence has not accumulated to determine the safety of this method of administration, but it appears sufficiently safe to warrant its use in severe alkalosis that cannot be corrected by the administration of salt and fluids promptly enough to avert the danger of renal changes.

Virginia Medical Monthly, Richmond

70:593-644 (Dec.) 1943

Medical Operation in Pacific Theaters. C. C. Hillman.—p. 594.
Low Backache from Viewpoint of Gynecologist. R. H. Hoge.—p. 598.
Problem of Military Rejects and Casualties. S. W. Hamilton.—p. 602.
Doctor's Own Wife—His Fourth Investment. J. B. McClinton.—p. 606.
Luetic Quadripedal Gangrene—Report of an Unusual Case. E. M. Fusco and T. Kell.—p. 611.
Use of Sodium Pentothal Anesthesia. N. G. Patterson.—p. 613.
Complete Roentgen and Ophthalmologic Examination for Ochronosis in Two Alcaptonuric Children. L. D. Abbott Jr., F. B. Mandeville and W. J. Rein.—p. 615.

War Medicine, Chicago

4:459-548 (Nov.) 1943

Dysenteries and Diarrheas: Their Importance in Military Service. G. R. Callender.—p. 459.
Frequency of Craniocerebral Injuries in Relation to Military Screening Examinations. L. A. Pennington and R. J. Mearin.—p. 465.
*Effect of Simulated High Altitudes on Subsequent Work Output. E. E. Foltz and A. C. Ivy.—p. 471.
*Syncopal Reactions During Simulated Exposure to High Altitude in Decompression Chamber. J. Romano, G. L. Engel, J. P. Webb, E. B. Ferris, H. W. Ryder and M. A. Blankenhorn.—p. 475.
Psychoneuroses of War. F. P. Moersch.—p. 490.
Heart in Dengue: Some Observations Made Among Navy and Marine Combat Units in South Pacific. A. S. Hyman.—p. 497.
"Pulsating" Hematoma (False Aneurysm). W. C. Beck.—p. 502.
Psychopathic Military Prisoner. N. Blackman.—p. 508.
Care of Wounded in Theaters of Operation: Circular Letter No. 178. —p. 514.

Effect of High Altitude on Work Output.—Foltz and Ivy report experiments on 4 medical students. One had been trained for over one and one-half years on a bicycle ergometer. Two had been trained for six months and 1 for three months before this experiment was begun. Three times each week these subjects were put into the decompression chamber, where altitudes from 2,000 to 18,000 feet were simulated for an hour. On coming out of the chamber the subjects would work to fatigue on an electrodynamic brake bicycle ergometer, then rest for ten minutes on a bed and again work to fatigue. The subjects were first subjected to a simulated altitude of 10,000 feet for one hour. This had no effect on the subsequent work output of any of them. Next, a simulated altitude of 15,000 feet for one hour was used, with indefinite results. The highest simulated altitude to which the subjects could safely be submitted for one hour without oxygen was 18,000 feet. Exposure to this altitude without oxygen for one hour caused a decrease in the subsequent work output of 3 of 4 trained subjects. A rest period of from twenty to thirty minutes between their coming out of the decompression chamber and working was not sufficient for 3 of 4 trained subjects to permit complete recuperation. Exposure to a simulated altitude of 18,000 feet without oxygen for one hour produced no consistent change in the ability of 4 trained subjects to recover from the effects of working to exhaustion. Exposure to this altitude without oxygen for one hour produced cyanosis and many subjective complaints, the most common of which were headache, a feeling of semisomnolence, dyspnea, nausea, visual disturbances, palpitation and an urge to void on return to ground level. The authors conclude from these observations that if air borne troops are incapacitated secondary to anoxia or hyperventilation at any altitude they are likely to be less capable of violent muscular effort for as long as thirty minutes after experiencing the symptoms.

Syncopal Reactions During Simulated High Altitude.—Romano and his co-workers analyzed the syncopal reactions occurring during 754 individual exposures of 51 subjects to a simulated altitude of 35,000 feet. Reduction in oxygen tension was not a factor, since 100 per cent oxygen was supplied from the ground up. The subjects were medical students and physicians capable of self observation. All flights were made at a rate of a climb of 5,000 feet per minute. All exposures were at 35,000 feet, and the maximum duration was three hours. The following symptoms and signs were considered to be manifestations of syncopal reactions: weakness (or faintness), dizziness (or lightheadedness or unsteadiness), pallor, sweating, nausea, fall in blood pressure, confusion and unconsciousness. Syncopal reactions were recorded 91 times in 37 subjects. There were two main types of syncope: (*a*) the vasodepressor type (74 cases), characterized by rapid onset, progressive course and symptoms of weakness, nausea, sweating, pallor and hypotension, which were related to posture, and (*b*) the nondepressor type (11 cases), characterized by recurrent and fluctuating course, flushing and absence of signs of circulatory collapse. Syncopal reactions occurred most often in the presence of multiple symptoms of decompression sickness. Chokes were the most frequent precipitating factor. All instances of the nondepressor type followed chokes. The vasodepressor type was precipitated by bends, chokes or abdominal distention, alone or in combination. There was no correlation between a history of syncope and the occurrence of flight syncope. Frequent syncopal reactions occurred in subjects susceptible to severe decompression sickness; they were complications of decompression sickness rather than indications of susceptibility to "easy fainting." The responses of 20 subjects to tilting on a tilt table were studied 37 times before and 47 times after flight. Syncopal reactions were provoked 6 times by tilting after flight; in 5 instances there had been preceding syncope during flight, and in 3 postural maladaptation of the subjects was still demonstrable two to seven hours later. Elimination of subjects susceptible to decompression sickness would automatically eliminate the great majority of syncopal reactions.

West Virginia Medical Journal, Charleston

39:365-396 (Nov.) 1943

Neurosurgical Procedures for Relief of Pain. C. C. Coleman.—p. 365.
Otolaryngology in General Practice. H. M. Goodyear.—p. 373.
Early Diagnosis of Acute Abdomen. J. A. Soffel.—p. 379.

39:397-432 (Dec.) 1943

Effect of Anoxia on the Body. E. J. Van Liere.—p. 397.
Treatment of Third Degree Burns. J. S. Klumpp.—p. 406.
Sterility and Artificial Insemination. H. B. Copeland.—p. 415.
Acute Poliomyelitis and Public Health Regulations. H. A. Swart. —p. 418.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

16:323-356 (Nov.) 1943

Radiologic Evidence in Hematite Iron Ore Workers. R. Fawcitt.—p. 323.
Preliminary Note on Planning of Combined Radiotherapy of Carcinoma Cervix Uteri. B. Sandler.—p. 331.
Spatial Distribution of Ionization in Irradiated Tissue and Its Relation to Biologic Effects. D. E. Lea.—p. 338.
Metabolic Effects of Therapeutic Doses of X and Gamma Radiations. J. S. Mitchell.—p. 339.
Radiology—Empiricism or Science? A. E. Barclay.—p. 344.
"Exhaustion" Fracture of Spine: Preliminary Report on One Case. J. B. Hartley.—p. 348.
"A Helping Hand": Presidential Address to Faculty of Radiologists. R. Paterson.—p. 351.
An X-Ray Output Meter. J. E. Roberts and F. T. Farmer.—p. 353.
Tomographic Attachment Suitable for Most X-Ray Plants. C. H. Goldman.—p. 355.

"Exhaustion" Fracture of Spine.—According to Hartley, stress, fatigue or exhaustion fractures occur almost exclusively in weight bearing bones. Before the diagnosis of fatigue or exhaustion fracture can be accepted it is necessary to establish that the affected bone presents otherwise normal radiologic appearances. A boy aged 17 had been driving a coal cart for three years. For the twelve months prior to his admission he had been delivering 1 hundredweight bags of coal. This he did by turning his back to the sack, placing both hands behind his head and pulling the coal bag on to his back, where it rested on his lower cervical and upper thoracic regions. He was admitted to the hospital with a clinical diagnosis of probable Pott's disease of the upper thoracic spine, the diagnosis being based on the history of pain in the upper dorsal region for some three weeks and tenderness to pressure in that area. At the onset no pain was felt in the back; the patient complained of a "throb" experienced in the chest behind the breast bone. This continued for some days, during which he continued with his work. He collapsed suddenly with very acute pain in the dorsal region. The pain was sudden in onset and "tearing" in nature. He was unable to sit upright without assistance. X-ray examination revealed that the body of the fifth thoracic vertebra was wedge shaped. On the basis of control films the patient's occupation, age and good general condition and because of absence of pathologic change in the neighboring vertebrae the author diagnosed the condition as stress or compression fracture.

Edinburgh Medical Journal

50:577-640 (Oct.) 1943

*Wound Infection: Preliminary Note on Combined Clinical and Bacteriologic Investigation of 708 Wounds. H. L. De Waal.—p. 577.
Hemolytic Anemias. L. J. Davis.—p. 589.
*Diphtheria in Middle East: Some Observations on 71 Cases. T. A. MacGibbon.—p. 617.
Hemoglobinometers. S. Hay.—p. 626.

Wound Infection.—De Waal reviews observations on over 700 wounds. The object was to determine by repeated bacteriologic examinations of wounds their "bacteriologic history" and to ascertain the effect of sulfanilamide and sulfapyridine powder, sulfacetamide, acriflavine, gentian violet, brilliant green, eusol, zinc peroxide, isotonic and hypertonic saline solution and the coagulants tannic acid and silver nitrate plus gentian violet. A few cases were treated with a crude penicillin preparation. On admission to the hospital 18.9 per cent of wounds contained Staphylococcus pyogenes and 13.1 per cent hemolytic streptococci: other pathogens were found in much lower percentage. Although 27 of 708 wounds contained Clostridium welchi and other clostridiums were found in 31, only 3 patients developed symptoms of gas gangrene. The number of organisms present in wounds on admission to the hospital was directly related to the time following injury: up to six hours the number was small. This emphasizes the need for treating wounds during the first four to six hours. In wounds which had been "cleaned" and dressed all infections were more frequent than in those which had been dressed only with a sterile dressing. Eighty-six per cent of all wounds and 67 per cent of burns became infected during hospital treatment. If rate of healing is regarded as the criterion of the efficiency, then, with the exception of acriflavine and gentian violet, all the other antibacterial substances used yielded almost equally good results in wounds and in burns. If, however, freedom from infection is regarded as the criterion of efficiency, then, excluding consideration of penicillin, the flavines are the best. Acriflavine controls gram positive organisms and to a lesser degree gram negative types but delays the healing process. Repeated applications of acriflavine rendered many wounds sterile in three to five days. Early application of flavine appears to be a logical method of rendering wounds bacteriologically clean. After four or five days another antiseptic substance should be substituted. At this stage, with a relatively clean wound, the sulfonamides appear suitable.

Diphtheria in the Middle East.—MacGibbon says that among the 11,097 patients who passed through a hospital in Egypt there were 71 with diphtheria. Forty-nine persons with faucial and pharyngeal diphtheria were seen. Of these, 17 made uneventful recoveries but 32 developed complications. Only 2 cases of laryngeal diphtheria were seen. There were 8 cases of nasal diphtheria, in 4 of which complications developed and in 4 recovery was uneventful. Twelve cases of nonrespiratory diphtheria were seen. It was noticeable that any form of wound, desert sore, ulcer, burn or skin lesion was liable to become infected with corynebacterium diphtheriae. The lesions which did become infected with C. diphtheriae were 3 chronic pulp infections of the finger, 1 chronic ulcer of the buttocks, 1 chronic ulcer of the abdominal wall, 1 chronic multiple desert sore, 1 compound fracture of the tibia and fibula, 1 chronic infected second degree burn of the feet and 4 cases of chronic suppurative otitis media. Three of these cases were not diagnosed until the appearance of polyneuritis. Of the 12 cases there were complications in 5, a fatal outcome in 1 and uneventful recovery in only 6. Peripheral neuritis was the commonest complication. It was often extremely severe and debilitating. In 17 out of a total of 19 cases it involved several cranial nerves, also most of the muscles of the limbs, trunk and abdomen. Myocardial involvement occurred in 17, or 23.9 per cent, of cases. The dose of antitoxin needed to control the membrane and the toxemia seemed to be higher in Egypt than that needed in Great Britain. The author has seen up to 196,000 units given to 1 patient within three days. The average was 40,000 to 50,000 units, and in severe toxic cases from 50,000 to 100,000 units. The cutaneous type of diphtheria is easily overlooked and, as a result, insufficient antitoxin is given. It is suggested that antitoxin be combined with toxoid or that military personnel be actively immunized against diphtheria.

Lancet, London

2:561-592 (Nov. 6) 1943

Treatment and the Patient. L. Cole.—p. 561.
Splinting of the Femur Fractured by Gunshot Wound: Tobruk and Double Cuff Plaster. J. D. Buxton.—p. 564.
*Water-Pitressin Test in Diagnosis of Epilepsy. H. G. Garland, A. P. Dick and C. W. M. Whitty.—p. 566.
Inhibition of Penicilin in Routine Culture Mediums. G. J. Harper.—p. 569.
Intra-Arterial Injection of Pentothal: A Warning. R. R. Macintosh and P. S. A. Heyworth.—p. 571.
Concentration of Sulfapyridine in Bile. Nancy Gough.—p. 571.

Water-Pitressin Test in Diagnosis of Epilepsy.—According to Garland and his collaborators the diagnosis of epilepsy is rarely a matter of urgency in civil life, but in the army it must be made quickly. A rapid method of establishing the presence of epilepsy is of value. The electroencephalogram provides such a test, but it is not always available nor are its results always conclusive. Hyperventilation, small doses of metrazol and the ethyl chloride spray test have on the whole proved unreliable. The water-pitressin test has been found more satisfactory by most workers. The authors used it in 96 cases, including 20 controls. The patient was kept in bed on a normal diet throughout the test and for twenty-four hours after it. A pint of water was given hourly from 7 a. m. until the test was discontinued, usually after 11 pints. Posterior pituitary injection was given hourly from 10 a. m., the doses being 0.2, 0.3, 0.4 and 0.5 cc., followed by four doses of 0.5 cc., a total of eight injections. The patient was weighed repeatedly. The blood pressure was measured two hourly or more frequently

if there were definite fluctuations. Fluid given included water, lemonade, milk and ovaltine. All fluid intake and output, including urine and vomitus, was measured; this gave a further check on water retention apart from the weight change. The test was stopped if a fit occurred and 1 grain (0.06 Gm.) of phenobarbital was given by mouth. It was stopped also if there was severe vomiting, abdominal discomfort or persistent headache. The authors consider the test of value since in about 40 per cent of the epileptic the diagnosis of epilepsy may be established at once. They stress the importance of careful and continuous observation, with particular reference to general condition and blood pressure. Under these conditions the test seems to be free from risk. It has never induced a fit in a person who was not epileptic. Its usefulness is demonstrated by the results of investigation of 96 patients. Of 44 with epilepsy, 17 (39 per cent) had a fit during the test. Of 32 with doubtful epilepsy, 12 (38 per cent) had a fit. Of 20 controls with hysterical personality, none had fits.

Revista de la Sociedad de Pediatría de Rosario

8:99-209 (May-Aug.) 1943. **Partial Index**

So-Called Cyst of Meniscus: Case in Child 4 Years Old. C. Infante and C. Santervas.—p. 99.
*Blood or Plasma Transfusion in Infants: New Route. R. F. Pinto. —p. 108.
*Poliomyelitis: Therapy. C. Infante.—p. 152.

Blood Transfusion in Infants.—Pinto discusses the value of the peripheral veins (the facial on the forehead, the veins of the dorsum of the hand, and those of the palmar aspect of the wrist and of the thumb) for blood or plasma transfusion in infants. These peripheral veins have advantages over all other routes previously used, including the longitudinal venous sinus and the bone marrow. The technic is simple and the procedure is harmless. The only contraindications are general edema, acute burns and increased fragility of the capillaries, which are rare. In the departments for transfusion of two pediatric clinics of Buenos Aires 1,000 transfusions of either blood or plasma were satisfactorily carried out utilizing the peripheral veins of infants. Contraindications were present in 10 cases.

Poliomyelitis.—Infante advises postural immobilization of one or both limbs and the thorax in splints or in casts as soon as paralysis appears and through the paralytic period, a segmental immobilization of the paralyzed segments or of the thorax alternating with or followed by physical therapy and muscular reeducation during the period of regression of paralysis and orthopedic correction for permanent sequels. The Lorenz bed for immobilization of the trunk is used in cases of paralysis of the trunk. The shoulder is immobilized in abduction of 60 degrees or more, the elbow in flexion of 90 degrees, the forearm in intermediate position with the wrist in moderate dorsal extension, the hip joint in extension and moderate abduction, the knee joint in extension and the foot either at an angle of 90 degrees or in moderate equinus posture of 100 or 110 degrees. Early orthopedic therapy prevents stretching of the normal muscles, improper posture of the structures and muscular contraction.

Archiv für Kinderheilkunde, Stuttgart

126:65-112 (June 30) 1942

*Chemotherapy of Acute Nephritis. S. Gaál.—p. 65.
Detection of Mentally Defective Children. H. Krenek.—p. 72.
Treatment of Epidemic Meningitis with Sulfapyridine. Sibill-Marie Hesemann.—p. 84.
Diphtheritic Croup. E. Keyser.—p. 96.

Chemotherapy of Acute Nephritis.—At Gaál's clinic bed rest and Noorden's renal diet are generally employed for children with nephritis. A group of 41 children was treated with bed rest and diet only; a group of 26 children was given sulfonamides in addition. It appeared that sulfonamide preparations can be given without danger to the kidney during any stage of acute, nontoxic nephritis. The sulfonamides are particularly effective in bacteriogenic nephritis, especially in forms caused by cocci. In these cases they greatly accelerate the cure. Renal complications are apparently no more frequent than when sulfonamides are administered for extrarenal processes. Apparently renal disease as such does not necessarily signify a predisposition to the secondary renal effects of the sulfonamides.

Klinische Wochenschrift, Berlin

21:581-600 (June 27) 1942. **Partial Index**

*Storage of Identical Coccus-like Formations in Endothelial Cells of Skin, Mucosa and Lymph Nodes in Mycosis Fungoides, Streptococcic Sepsis, Scarlet Fever and Experimental Streptococcic Infections. J. H. Tornack.—p. 581.
*Action of Large Doses of Diethylstilbestrol on Pregnant Organism. B. Belonoschkin and W. Bragulla.—p. 583.
Some Defects in Determination of Ascorbic Acid in Urine. L. von Dobszay.—p. 589.

Coccus-like Formations in Endothelial Cells in Infections.—Involvement of the skin in many systemic diseases caused by micro-organisms suggested the search for defense mechanisms in the skin. Tornack encountered peculiar endothelial changes in the skin and lymph nodes of patients with mycosis fungoides. The endothelial cells, usually with a well preserved nucleus, contained dense colonies of coccus-like formations. The coccus-like forms were sharply outlined and assumed a deep red-violet color on staining according to Pappenheim or with Giemsa's solution. The author observed endothelial storage of these coccus-like forms also in a patient with streptococcic sepsis, in guinea pigs infected with streptococci, in exanthem, enanthem and lymph nodes of scarlet fever patients and even in their capillary endothelium. He is convinced that these formations play a part in the defense against infection. Similar endothelial changes have been observed in the abdominal skin of patients who died from epidemic or tuberculous meningitis, agranulocytosis and diphtheria, as well as in the lungs of mice infected with pneumococci.

Action of Large Doses of Diethylstilbestrol on Pregnant Organism.—Belonoschkin and Bragulla administered dipropionate of diethyl dioxy stilbene intramuscularly to 12 women hospitalized for interruption of pregnancy or with threatened abortion. Small doses were given in the beginning, but gradually they were increased up to extremely large doses. The high doses were accompanied by subjective complaints of restlessness, insomnia, vertigo, nausea, pains in the lower part of the abdomen and increased urge to urinate. Abortion was never favored by the diethylstilbestrol. The sedimentation speed of the erythrocytes became noticeably increased. This is ascribed to an intensified function of the reticuloendothelial system. The placentas of the treated women showed increased fibrinoid necrosis and hyperemization. It is probable that the biologic action of the synthetic estrogenic substance differs from that of the natural hormone. Some of the women were reexamined from nine months to one year later; all were well and free from menstrual disturbances.

Zentralblatt für Chirurgie, Leipzig

69:897-928 (May 30) 1942. **Partial Index**

*Läwen's Method of Chiseling off of Condyles in Phlegmons of Knee Joint, Particularly After Gun Shot Wounds. W. Hetzar.—p. 897.
Percutaneous Reduction of Fractures with Particular Consideration of Fractures of Head of Radius. J. Hohenwallner.—p. 909.
Further Experiences with Nailing in Marrow. H. Sprengell.—p. 911.
Should Nailing Be Done in Patients with Tabes and Median Fracture of Neck of Femur? R. Rauhs.—p. 912.
Technic of Amputation. H. J. Lauber.—p. 918.
Amputation with Skin, Fascia and Muscle Flaps. P. Müller.—p. 921.

Chiseling off of Condyles in Capsular Phlegmon of Knee Joint.—Hetzar reviews 32 cases of gun shot wounds of the knee joint, in 10 of which a capsular abscess developed. In these 10 and in 2 additional patients observed earlier the condyles were chiseled off according to Läwen's method. The chiseling off of the condyles is not difficult. The majority of the wounded retain a stiff knee after this operation. The aim must be to obtain an ankylosis in as favorable a position as is possible. Exact immobilization is therefore of greatest importance. If a partial resection such as chiseling off of the condyles is capable of controlling articular suppuration, other more extensive methods can be avoided. The total resection, which is still widely used in the presence of a capsular abscess, results always in a greater shortening of the stiffened leg than is the case after the removal of the condyles. A certain function of the knee is retained occasionally after Läwen's operation, for injury to the cruciate ligaments is carefully avoided. Chiseling off of the condyles makes possible saving of the extremity even in progressive suppuration in the thigh and leg.

Book Notices

War Endocrinology. By James H. Hutton, M.D. Cloth. Pp. 363. Chicago: Wayside Press, 1943.

The use of the word "war" in the title has no significance, unless it is used to indicate that it was published in wartime. In the preface the author says "This is not a complete text on endocrinology; it will have no value to the endocrinologist." This statement is hardly true, for the volume contains much information, both pro and con, which will give an endocrinologist considerable food for thought. It does not seem sufficiently fundamental for one not experienced in endocrinology to gain a basic knowledge of the subject. The author stresses the clinical evidences of endocrinology rather than the scientific. In the introduction (page viii) he states that "There are still a few basic facts, tested clinically, which can be helpful to the practitioner whose training antedated the rise of this specialty." One can agree with the author on this point, as there has been a tendency for a number of years to overlook the development of keen clinical sense. The book is devoid of references; therefore one cannot investigate the authority for many statements or the authenticity of them. The absence of references precludes the possibility for supplemental reading. The various glands and their disorders are discussed in a conversational style; the book is easy to read. Much attention has been given to treatment, which is always difficult and often discouraging in any specialty of medicine. The material contained in the book is interesting in that it combines past knowledge on the subject, which is chiefly clinical, with some of the present, which is biochemical.

Pictorial Life History of the Apothecary Chemist, Carl Wilhelm Scheele. By George Urdang, Ph.G., D.Sc.Nat., Director of the American Institute of the History of Pharmacy, Madison, Wisconsin. Published under the Auspices of The American Institute of the History of Pharmacy and The American Pharmaceutical Association. Paper. Pp. 71, with illustrations. Madison, Wisconsin, 1942.

Under the auspices of the American Institute of the History of Pharmacy and the American Pharmaceutical Association, the life history of Carl Wilhelm Scheele, apothecary chemist of the eighteenth century, has been presented in booklet form by George Urdang, director of the institute. The booklet is a tribute to this outstanding apothecary and to the pharmacy profession, a tribute which reveals the true status of early pharmacy. In addition to presenting an outline of Scheele's activities, discoveries and recognitions, the booklet offers many pictures pertaining to his life, associates and the districts in which he lived. His achievements include the discovery of chlorine, manganese, oxygen, ammonia, many acids, and the purification and identification of numerous chemical compounds, all of which clearly demonstrate this man's curiosity and research and the valuable practical applications that followed his discoveries. It is a tragedy that death terminated at the age of 44 years the career of a man who contributed so much to chemistry and pharmacy.

Die Thrombozyten des menschlichen Blutes und ihre Beziehung zum Gerinnungs- und Thrombosevorgang. Von Prof. Dr. med. A. Fonio, Professor für Chirurgie an der Universität Bern, und Dr. med. J. Schwendener. Cloth. Price, 9.60 francs. Pp. 130, with 112 illustrations. Bern: Medizinischer Verlag Hans Huber, 1942.

This monograph is devoted to a study of the role of the blood platelets in blood coagulation and thrombosis by means of the microscopic observation with the dark field microscope. The first section of the monograph is concerned with a detailed morphologic study of the platelets using fresh blood which had been cooled to 1 C. and centrifuged. A drop of plasma was put under the dark field microscope and the morphologic changes in the platelets were observed and recorded by photomicrographs. The authors describe several forms of platelets and ascribe different biologic significance to them. They contend that the blood platelet consists of two parts which behave quite differently from a functional aspect. The granules of the platelet take over the function of the nucleus of the cell and are associated with fibrin formation, whereas the protoplasm or its pseudopods has the adhesive function in rough places which have a thromboplastic function. The authors discuss the behavior of the blood platelets in the process of coagulation and thrombosis in the second section of the monograph. A detailed account of their technic and results is not possible in a review of this type, but the work is well documented with a detailed explanation of technics employed and changes observed. The inclusion of 112 illustrations, practically all of them photomicrographs of the morphologic alteration of the platelet under the dark field microscope, aid one considerably in visualizing the descriptive material in the text. The material is highly provocative though speculative. However, considering the excellent previous work done by the authors in this field of investigation the material merits serious consideration. The monograph will be of particular interest to those interested in hematology, physiologic chemistry and vascular surgery. It is an important contribution to investigators concerned with the problem of blood coagulation.

Lincoln-Douglas: The Weather As Destiny. By William F. Petersen. Cloth. Price, $3. Pp. 211, with illustrations by Jean McConnell. Springfield, Illinois & Baltimore: Charles C Thomas, 1943.

"If the conscious reaction was so obviously governed by the subconscious, and the subconscious so evidently conditioned by the state of the total personality, or the environment, or the weather, we can assume that much in the background of what was seemingly 'mysterious' in Lincoln is to be sought in the unusual development of these relatively intangible mechanisms of the autonomic nervous system, and particularly the lower brain centers." This paragraph from Dr. Petersen's book pretty well characterizes its contents. According to him, all human acts are greatly influenced by the total personality, the ancestry and especially the weather. The latter, in turn, is influenced by the sun spots; however, leading men and great events do not reflect the sun spots but the cosmic rhythm of the sun spot cycle.

The author has selected three persons to demonstrate his theory: Lincoln, Mrs. Lincoln and Douglas. The book does not pretend to bring new historical facts; its scope is limited to a novel interpretation of facts already known. The author's division of human beings into slender and broad bodies is rather elementary and far from original. Textbooks in phrenology have followed this line of demarcation for a century and have done so more fully by separating people into three temperaments instead of two—the motive, the vital and the mental—and by recognizing that these three temperaments are usually represented in varying proportions. This chapter is the weakest part of the book, and its quasipopular presentation does little to improve it. The remainder of the volume is devoted to the development of Dr. Petersen's main theory, but while he makes out a plausible case for it the number of persons and destinies on which it is based make deductions hazardous.

A few more paragraphs may serve to illustrate the author's views in regard to the unseen influences at work in history:

> If Abraham Lincoln's wife and his four children, if his father and step-mother died with sun spot crests they did not die because the sun spots killed them. They died because the energy demand of the immediate environment had been greater than the supply that was available.
>
> If both a depressed and discouraged Lincoln and a depressed and discouraged Tennyson terminated engagements to marry at the same time; if both Darwin and Tennyson were seriously exhausted physically and mentally and reached their nadir of illness in the years 1847 and 1848; if Darwin fashioned his scientific monument and Tennyson his greatest literary masterpiece and Lincoln reached his political goal and Gladstone assumed leadership of the House of Commons all in the period from 1856 to 1860 when solar turbulence rapidly increased, then human episodes are not just chance, the common environment fashions the background. These unusual characters could seize the opportunity, could respond to the cosmic vibration and achieve the height of fame. . . .
>
> If Lincoln's father, and Darwin's father, and Gladstone's father died at approximately the same time, the statisticians will surmise that they died because they were all of approximately the same age, but that does not account for the fact that Lincoln's boy and Darwin's daughter and Gladstone's daughter died at the same time as their grandfathers! These old and young humans died because the environmental strain was enhanced the world over—and with greater strain these frailer vessels couldn't go along, the old and the young being more sensitive than the group in between. The turbulence of the sun did not kill them; defective hearts and impaired kidneys and the ever ready world of micro-organisms were most likely the direct causes.

Theories such as Dr. Petersen's should be treated with tolerance and met with encouragement. Even if not proved, they may contain the kernel of a worthwhile truth. This book would have been more convincing if the subject had been treated less onesidedly, less like a lawyer's brief and more like a clinical report. As a basis for new research the subject is not without interest, but thus far the author has scarcely begun his work.

If he fails in his mission to gain converts it is because he has tried to demonstrate by means of insufficient evidence what may or may not at some future time be accepted as a new and important factor in shaping historical events.

An Introduction to Medical Mycology. By George M. Lewis, M.D., Assistant Professor of Clinical Medicine (Dermatology), Cornell University Medical School, New York, and Mary E. Hopper, M.S. Second edition. Cloth. Price, $6.50. Pp. 342, with 79 illustrations. Chicago: Year Book Publishers, Inc., 1943.

When this volume appeared in its first edition in 1939 it filled a definite need in the medical and, in particular, in the dermatologic literature. The necessity for a second edition at this time is evidence of the great popularity which it quickly and justly acquired. It is therefore all the more regrettable that many of the items which were subjected to criticism in the review of the first edition in THE JOURNAL remain unchanged. However, in other respects the second edition has been brought up to date and represents an improvement over the standard achieved in the first edition.

The new edition contains additional excellent illustrations, including some color plates showing the characteristic hues of certain types of fungi in culture. There are also new sections dealing with tinea nodosa, histoplasmosis, rhinosporidiosis and mycoses of the lungs. More information has been added on immunologic procedures such as the coccidioidin, blastomycin and sporotrichin skin tests; the passive transfer technic has been given in greater detail. In the reviewer's opinion the camphor-phenol treatment of fungous diseases is rightly condemned as unnecessarily hazardous.

Pityrosporon ovale has been shifted from the chapter on "questionably pathogenic fungi" to the chapter on "probably pathogenic fungi." The wisdom of this shift as well as of the statement "that there is as much if not more proof of causal relationship between P. ovale and dandruff as between M. furfur and tinea versicolor" may be doubted. Many observers will likewise disagree with the opinion that "it is unlikely that fungous disease would supervene on a contact dermatitis."

While statements such as those just listed may be subjected to challenge, "An Introduction to Medical Mycology" is, in its field, the most useful book available to the student, the general practitioner and the dermatologist.

Reconstructive Surgery of the Eyelids. By Wendell L. Hughes, M.D., F.A.C.S. Cloth. Price, $4. Pp. 160, with 198 illustrations. St. Louis: C. V. Mosby Company, 1943.

This monograph is a thesis presented for admission to the American Ophthalmological Society. It is strictly limited in scope to the subject designated by the title but within these limits is truly exhaustive. There are 451 references to the literature, and the development of various procedures for reconstruction of the eyelids, from the earliest times to the present, is described. The author illustrates the methods favored by him in 20 case reports. The influence of the teachings of Wheeler is evident throughout. Practically all the cases shown involve the lower eyelid. While probably lower lid lesions and defects are by far the more common, yet one would welcome authoritative advice on the repair of the occasional upper lid defect. Twelve of the case reports illustrate the author's method of partial or total reconstruction of the lower lid by utilizing the tissues of the upper lid. This work is not to be regarded as a systematic textbook on eyelid surgery but is an excellent presentation within the limits set by the author. It is hoped that the success of the book will encourage the writer to publish later a more comprehensive volume dealing with reconstruction of all the orbital structures.

Biomicroscopy of the Eye: Slit Lamp Microscopy of the Living Eye. By M. L. Berliner, M.D., Assistant Professor of Clinical Surgery (Ophthalmology), Cornell University Medical College, New York. Volume I. Cloth. Price, $17.50. Pp. 709, with 512 illustrations. New York & London: Paul B. Hoeber, Inc., 1943.

This book on slit lamp microscopy of the living eye is the first written in English by an American on this subject. The first two chapters, consisting of 110 pages, are devoted to a thorough description of the various types of slit lamps in general use, including the latest by Comberg and Poser, and include the mechanics and physics of the illuminating systems. The second chapter describes the technic of biomicroscopy and should be invaluable to the ophthalmologist using the slit lamp. There are six chapters devoted to the conjunctiva, eyelids and sclera. The various lesions of the cornea are covered in the next six chapters. One chapter is devoted to the anterior chamber. The last chapter, consisting of 59 pages, deals with gonioscopy and was written by Dr. H. Saul Sugar. It is the most comprehensive thesis on this subject in English to date. The illustrations are clear and instructive. The forty colored plates each contain from five to eight figures in full eight color plates and are beautifully done. They enhance the value of the book materially. The print is large and easily readable, while the text is clear, comprehensive and well written, and the illustrations add a great deal to the simplification and clarity of this complicated subject. This book is a combination of clinical guide, textbook and atlas on slit lamp examination of the living eye. The bibliography is extensive and should meet the requirements for further study of any reader. The biomicroscopy of the iris, lens and vitreous is to be covered in a separate volume. This book should be well received by all English reading ophthalmologists because of its clear text and beautiful colored illustrations, and because it admirably fills a gap in the ophthalmic literature.

A Textbook of Exodontia: Exodontia, Oral Surgery and Anesthesia. By Leo Winter, D.D.S., M.D., F.A.C.D., Professor of Oral Surgery, New York University. Fifth edition. Cloth. Price, $10. Pp. 576, with 492 illustrations. St. Louis: C. V. Mosby Company, 1943.

The present edition of this standard and well accepted book is a revision of its predecessor and is received with the continued favor which it justly deserves. It is a practical textbook of exodontia and anesthesia designed for the use of the student and practitioner of dental and oral surgery. Detailed description of applied surgical technic is one of the important attributes of the book.

The subjects of local and general anesthesia for oral surgery are adequately discussed, and the chapter on local anesthesia has been completely revised. Monocaine hydrochloride is given special consideration. In the treatment of pathologic conditions which contraindicate intraoral anesthesia, and operative procedures which require anesthetization of the skin surface as well as the jaws, emphasis has been placed on extraoral technic. The addition in this edition of color plates of drawings from original laboratory specimens illustrate the regional anatomic structures through which the needle passes in reaching the mandibular and maxillary nerve trunks.

General anesthesia is again presented in this edition by Emery Andrew Rovenstine, M.D., professor of anesthesia, New York University College of Medicine and College of Dentistry, and director Division of Anesthesia, Bellevue Hospital, New York. Notable additional material in this book is also the new chapter on general anesthesia for ambulatory dental patients by Anthony S. Mecca, D.D.S., assistant professor of oral surgery, New York University College of Dentistry; associate visiting dentist, Bellevue Hospital.

Other chapters on supplementary and related subjects include accidents and infections following local anesthesia, prevention and treatment of bleeding, and notably the new chapter on chemotherapy.

The author, whose eminence and ability in the field of oral surgery are well recognized, has admirably achieved the purpose for which this edition was revised and has successfully brought up to date a subject which is an important contribution to the literature.

Food Inspection Notes: A Handbook for Students. By H. Hill, F.R. San.I., F.S.I.A., A.M.I.S.E., Sanitary Inspector, Borough of Southgate, and E. Dodsworth, M.R. San.I., M.S.I.A., Sanitary Inspector, Borough of Edmonton. Fabrikoid. Price, 6s. Pp. 121. London: H. K. Lewis & Co., Ltd., 1943.

Owing to the extent of the subjects covered in such a small volume, the consideration given to the various phases of food inspection is necessarily limited. In the chapters dealing with postmortem meat inspection and the recommended disposition of diseased carcasses, considerable variation is noted from those found in the regulations of the United States Department of Agriculture, Bureau of Animal Industry, which is the American standard. Variance from this standard is also frequently noted in the consideration of other food products. The book contains some material that should be helpful to a student of this subject.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

PRACTICAL PREGNANCY TESTS

To the Editor:—**Please tell me the most up to date and reliable test for pregnancy and the technic. Is it of such a nature that it can be done satisfactorily by a country practitioner?**

Robert F. Thomas, M.D., Sevierville, Tenn.

ANSWER.—The two most practical and most reliable tests for pregnancy are the original Aschheim-Zondek and the Friedman test. Of these the Friedman test is the most practical for the country practitioner.

A young female rabbit that is virginal or that has been segregated is used for the test. A first morning specimen of urine is collected, after fluids have been restricted the previous evening to give a greater concentration of hormones, in a clean bottle. It is filtered. Dilute 15 cc. of the urine with an equal amount of isotonic solution of sodium chloride. Inject 15 cc. of this mixture into the ear vein of the rabbit and inject the remaining 15 cc. eight to twelve hours later. Twelve hours after the second injection the animal is anesthetized and the abdomen opened. If this is done under aseptic precautions, the rabbit may be closed and it will be available for use, after a four week period of isolation, for further tests. At present, with a scarcity of rabbits, this is a valuable point in conservation.

The ovaries of the rabbit are located. A positive pregnancy reaction is manifested by the finding of ruptured corpora lutea plus the presence of hemorrhagic follicles. Absence of such findings constitutes a negative test, but because some rabbits are refractory to the action of the gonadotropic hormones a control must be run before a true negative test reaction can be reported. To do this the abdomen is closed and another series of injections is done in the same manner as the first, using for the control urine from a patient who is known to be pregnant. If a negative reaction is obtained on again opening the rabbit, that animal is refractory. If the second test produces a positive reaction, the original urine was from a nonpregnant patient and the original test can be reported as negative. The test is about 98 per cent accurate.

If one wishes, blood serum may be used instead of urine, but the technic of the test is the same.

EFFECT OF BUFFER SOLUTIONS ON HUMAN BODY

To the Editor:—**What harmful effect, if any, can the use of "buffer" solutions, such as the phosphates, tartrates, carbonates and phthalates, have on the human body? I am particularly interested in information regarding the influence of strongly buffered solutions in the p_H range of 8 and higher. Any direction to literature will be appreciated.**

M.D., Kentucky.

ANSWER.—When taken by mouth, phosphates and tartrates are absorbable with difficulty and act therefore as typical saline cathartics. Phthalates do not appear to have been used therapeutically. Carbonate solutions are too strongly alkaline to permit of internal use, but in combination with carbonic acid as the bicarbonate they have been extensively employed as an alkalizing agent to measure and combat acidosis and to neutralize the hydrochloric acid of the gastric juice.

However, it would appear that the inquirer is primarily interested in the use of the "buffer" solutions named for parenteral administration. The intravenous or intraperitoneal use of such alkaline buffers would be fraught with many dangers, such as the development of alkalosis and tetany. The introduction of strongly buffered alkaline phosphate solution into the blood stream would lead to a reduction in the ionized calcium of the blood and to tetany, as would also the administration of the tartrate. Furthermore, the tartrates are toxic in other ways, producing renal injury and muscular and nervous symptoms.

Potassium acid phthalate is used in the laboratory as a primary standard in the preparation of standard acid and alkali solutions and in the Clark and Lubs series of buffers (over the range p_H 2.2-6.2) for colorimetric p_H work. While salts of phthalic acid apparently possess much lower toxicity than phenolphthalein and its many derivatives, there would not appear to be experimental justification for the parenteral introduction of phthalates into the body.

Sodium carbonate is too strongly alkaline to be employed for any internal therapy, oral or parenteral. While it is possible to prepare and use a solution somewhat more alkaline than sodium bicarbonate, it seems questionable whether anything would be gained by so doing. It would be more logical to use a little larger quantity of sodium bicarbonate. Since the buffers of the body act through the bicarbonate, all that can be accomplished can be secured through the use of sodium bicarbonate or sodium bicarbonate in combination with sodium chloride, the object of course being to aid in maintaining a normal electrolyte and water balance.

Buffers are discussed by Peters and Van Slyke (Quantitative Clinical Chemistry, Baltimore, Williams and Wilkins Company, 1931, vol. 1, Interpretations, p. 888), but more general information on the other points raised can be found in the recent editions of Sollmann's Manual of Pharmacology and Its Application to Therapeutics and Toxicology (ed. 6, Philadelphia, W. B. Saunders Company, 1942).

TUBERCULOSIS AND ANTISYPHILITIC THERAPY

To the Editor:—**Kindly discuss antisyphilitic therapy in latent and active tuberculosis. Is the twenty-six weeks routine of the Army, with its emphasis on mapharsen twice weekly, more likely to provoke a flare-up of tuberculous disease than the less intensive therapy in general civilian use a year or two ago? A patient with normal chest x-ray appearances two years ago developed a penile sore, darkfield positive, in May 1942 and received routine therapy. In August 1943 he developed a sore of the lower lip in which Treponema pallidum was demonstrated, and he was put on routine therapy again. Soon after hemoptysis and x-ray evidence of active parenchymal disease of the lung appeared suddenly. What opinion can be given as to the correctness of interpreting this sequence as cause and effect?**

Captain, M. C., A. U. S.

ANSWER.—There is undoubtedly a certain amount of risk in activating a latent tuberculosis when intensive treatment for syphilis is employed. On that account in one clinic where much intensive therapy has been used in the last two years it has become customary to take a routine x-ray film of the lungs before instituting the treatment. Is it possible in the interim between the first course of treatment and the second course of treatment that the patient may have had a massive exposure to tuberculosis? That seems the only way in which this situation can be explained.

Undoubtedly every person who is going to receive intensive therapy should have not only a careful physical examination but an x-ray examination of the lungs to rule out a latent tuberculosis.

CORNEAL TUMORS

To the Editor:—**Is there any comprehensive review or any information of value concerning corneal tumors of the functioning lacrimal gland? I have recently removed a fifteen year duration tumor from a cornea, and complete sectioning reveals a normal lacrimal gland complete with a normal duct. It is my impression that this occurrence is of sufficient rarity that this incident should be recorded.**

Major, M. C., A. U. S.

ANSWER.—As far as a cursory search of the literature reveals, a corneal tumor that consists of a normal lacrimal gland and lacrimal duct is in a class by itself. The impression is that such a tumor is a dermoid and should contain other structures. Corneal dermoids are not too unusual and hence are not commonly sectioned and reported.

References:

von Hippel, in Henke-Lubarsch: Handbuch der speziellen pathologischen Anatomie und Histologie **2**, part 1, p. 369.

Van Duyse, in Traité d'ophthalmologie de la Société française d'ophthalmologie **1**: 1041, 1939.

POLYCYTHEMIA VERA

To the Editor:—**In Queries and Minor Notes (The Journal, Nov. 13, 1943, p. 743) is an answer to a query on polycythemia vera in which you enumerate four different forms of treatment of this disease. The reply fails to mention one of the most successful recent treatments of the disease carried out by Dr. Lowell A. Erf of the Jefferson Medical College of Philadelphia. Dr. Erf published several articles on the subject of treating polycythemia with intravenous injections of phosphorus previously subjected to the cyclotron treatment in California. I can speak on the subject from personal experience, because my son, whose red blood cell count had been up to 9,200,000 and whose hemoglobin was 136, had three intravenous injections in Philadelphia about a year and a half ago. His red blood cell count after the third injection went down to 2,800,000, when small quantities of liver extract were administered and the red count has remained around 4,000,000 ever since. All treatments previous to Dr. Erf's administration, such as irradiation, acetylphenylhydrazine and phlebotomies, were unsuccessful.**

Joseph Darwin Nagel, M.D., New York.

[Radiophosphorus is not commercially available and the treatment, although promising, is still experimental, and for these reasons it is not now recommended for general use.—ED.]